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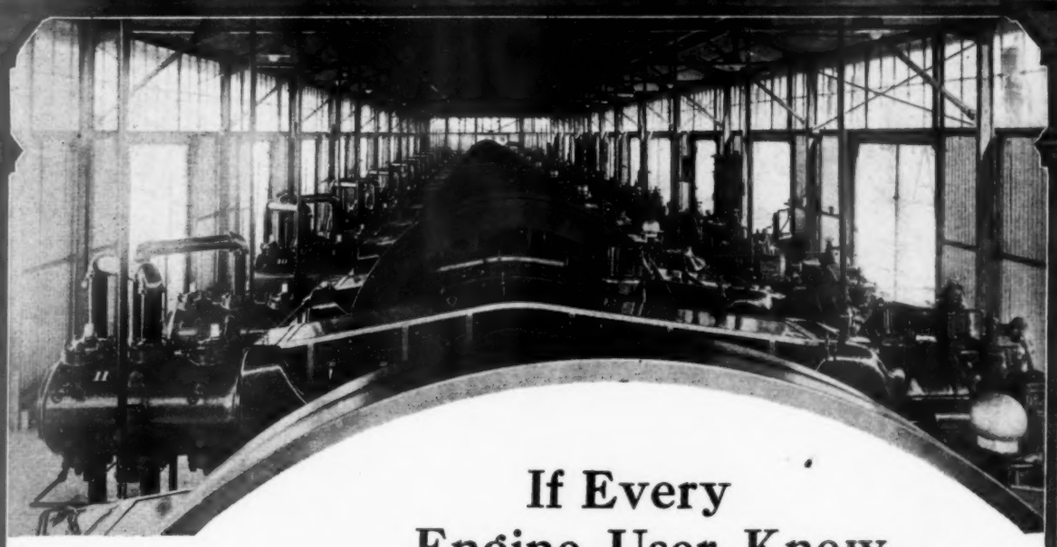

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Advertisers' Index on Page 25 Table of Contents on Page 26

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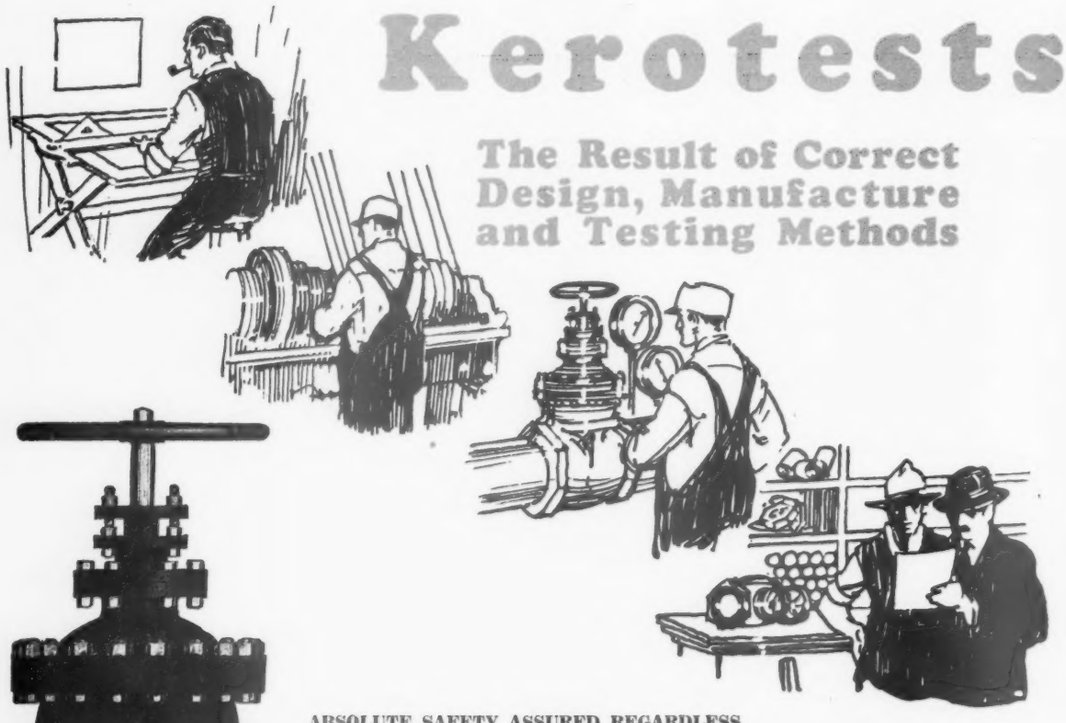

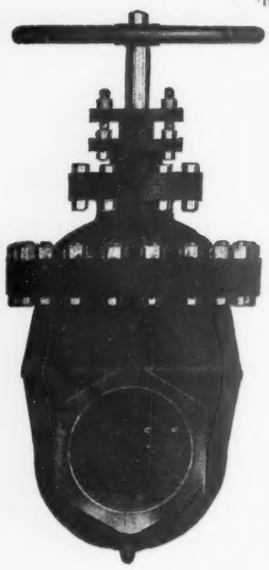

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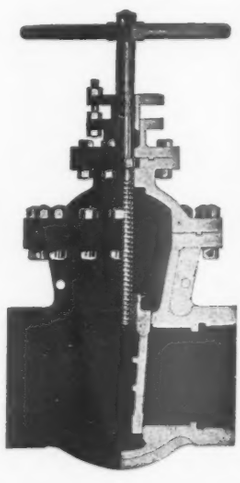

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XUM

The ADVERTISERS' INDEX

A

Acme Fishing Tool Co. 127
Air Cleaning & Reaming Corp.
Ajax Iron Works
Ajax Rope Co. 186
Aluminum Co. of America
Amarillo Abstract Co. 186
American Appraisal Co.
American Asphalt Paint Co.
American Car & Foundry Co.
American Mfg. Co. of Texas
American Radiator Co.
American Roller Bearing Co. 181
American Rolling Mill Co.
American Schaeffer & Budenberg Corp.
American Sheet & Tin Plate Co. 138
American Spiral Pipe Works
American Telephone & Telegraph Co.
American Well Works
Anderson & Anderson 188
Anderson, Carl B. 186
Andrews Steel Co. 180
Arco Company, The 14
Armstrong Bros. Tool Co. 185
Askania, Werke, A. G.
Athey Truss Wheel Co.
Atlas Ball Co.
Auer, C. A. 188
Austin Co. 111
Axelson Machine Co.

B

B. & A. Specialty Co.
Baash-Ross Tool Co.
Babcock & Wilcox Tube Co., The
Baker Casing Shoe Co. 116
Baldwin Chain & Mfg. Co.
Barber-Greene Co.
Barnickel, Wm. S., & Co. 184
Barnsdall Refineries, Inc. 136
Bartlesville Supply Co.
Belle City Mfg. Co.
Pessemer Gas Engine Co. 45
Bignall & Keeler Machine Works 124
Black Steel & Wire Co.
Blackmer Pump Co.
Blaw-Knox Co. 121
Borden Co.
Bovaird & Seyfang Mfg. Co.
Bovaird Supply Co., The 9
Braden Co.
Brady Conveyors Corp.
Braun, C. F., & Co. 81
Bridgeport Machine Co. 19
Bristol Co.
Broderick & Bascom Rope Co. 123
Brokaw, Dixon, Garner & McKee 188
Brooks Engineering Corp.
Brown, Arthur C. 186
Brownell Co. 184
Brown Instrument Co.
Brown & Thomsen 187
Brown Tool Co., Inc.
Buckeye Traction Ditcher Co.
Buda Co.
Buffalo Gasolene Motor Co.
Burns Tool Co.
Burt Corporation
Burt Mfg. Co.
Busch-Sulzer Bros. Diesel Engine Co.
Butler Mfg. Co. 21
Byers, A. M., Co.
Byron Jackson Pump & Mfg. Co., Inc. 72

C

Campbell, J. A. 134
Canadian Pacific Railway Co.
Carbondale Machine Co.
Casey-Hedges Co. 93
Caudill, Samuel J. 188
Celite Products Co.
Central Forging Co.
Central Steel Co. 117
Central Tube Co. 185
Chain Belt Co. 47
Champion Machine & Forging Co. 137
Chanplin-Fulton Mfg. Co. 185
Chapman Valve Mfg. Co. 62-63
Chestnut & Smith Corp.
Chicago Bridge & Iron Works 11
Chicago Pneumatic Tool Co.
Chicago Steel Foundry Co.
Chisholm-Moore Mfg. Co. 133
Clapp, Frederick G. 186
Clark Bros. Co. 66-67
Clark, Robert W. 188
Classified Wants 148-149
Cleveland Tractor Co.
Climax Engineering Co. 173
Coatesville Boiler Works
Columbian Rope Co.
Columbian Steel Tank Co.
Columbus Forge & Iron Co.
Columbus Sucker Rod Co.
Continental Motors Corp.
Continental Supply Co. 131
Cooper, C. & G., Co. Front Cover
Cox & Sons Co., The
Crane Co. 76-77
Crane Packing Co. 173
Crown Central Petroleum Corp.
Cushing, Tim, Tool & Supply Co.

D

D. & B. Pump & Supply Co.
D. & N. Specialty Co.
Darling Valve & Mfg. Co.
Dart, E. M., Mfg. Co.
Davis, G. M., Regulator Co.
Dayton Pipe Coupling Co.
Dearborn Chemical Co.
De La Vergne Machine Co. 181
Delta Electric Co.
Detroit Graphite Co.

D

Diamond Drill Carbon Co. 188
Dixon, Joseph, Crucible Co.
Dodge Mfg. Co. 91
Donovan Boiler Works, Inc.
Dresser, S. R., Mfg. Co. 55
Dunn Mfg. Co.
DuPont De Nemours & Co., Inc., E. I.
Durabla Mfg. Co.
Duriron Company, The

E

Eagle-Picher Lead Co. 3
Earnshaw, G. W. 188
Eastern Torpedo Co.
Eclipse Paint & Mfg. Co.
Edward Valve & Mfg. Co.
Elliott Core Drilling Co. 175
Empire Refineries, Inc.
Emsco Derrick & Equipment Co.
Equitable Meter & Mfg. Co. 83
Eureka Burner Co.

F

Fairbanks-Morse & Co.
Farley Machine Works Co.
Federal Supply Co.
Fenwick-Reddaway Mfg. Co. 172
Fisher Governor Co. 74
Foamite-Childs Corp.
Fohs, F. Julius 187
Foos Gas Engine Co. 88-89
Ford Chain Block Co. 143
Ford Motor Co.
Fort Worth Laboratories 186
Foxboro Co., Inc., The 99
Franklin Valveless Engine Co. 70-71
Frick-Reid Supply Co. 16
Full Crawler Co.

G

Gallagher Co.
Gardner Governor Co.
Garlock Packing Co.
Gaso Pump & Burner Mfg. Co. Inside Back Cover
General American Tank Car Corp.
General Insulating & Mfg. Co. 143
General Motors Truck Co.
General Oil Tools Co.
Gilbert & Barker Mfg. Co.
Gilfillan Machine Works
Gomory, W. L. 188
Goodrich, B. F., Rubber Co.
Goodyear Tire & Rubber Co.
Gott, H. P., Mfg. Co.
Goulds Pumps, Inc.
Graham Brothers
Gray Processes Corp. 106-107
Graver Corp. 155
Greenspon's, Joseph, Sons Iron & Steel Co. 176
Griscom-Russell Co. 128
Guiberson Corp. 55
Gulf Refining Co. 10

H

Halliburton Oil Well Cementing Co.
Harrisburg Pipe & Pipe Bending Co. 22
Hazard Mfg. Co.
Heppenstall Forge & Knife Co. 169
Herald Brothers 188
Hercules Motors Corp. 52
Hercules Tool Co.
Heydrick Mapping Co. 186
Hill, Hubbell & Co.
Hills-McCanna Co. 180
Hinderliter Tool Co.
Homestead Valve Mfg. Co. 93
Hood, H. H. 188
Hoover Steel Ball Co.
Hope Engineering & Supply Co. 61
Hopkins, Edwin B. 187
Hornblower & Weeks
Hough, Charles N., Mfg. Co. 174
Hoyt Metal Co.
Hughes Tool Co. Back Cover
Humble Oil & Refining Co. 129
Hunt, Robert W., Co.
Huntley & Huntley 186

I

Illinois Glass Co.
Imperial Belting Co. 142
Imperial Royalties Co.
Industrial Construction Co. 103
Ingersoll-Rand Co. 78
International Derrick & Equipment Co.
International Harvester Co. of America
International Supply Co. 12
Iron King Mfg. Co.

J

Jarecki Mfg. Co.
Jefferson Union Co.
Johns-Manville, Inc.
Jones, S. M., Co. 186

K

Kansas City Hay Press Co. 130
Kaw Steel Construction Co.
Kellogg, M. W., Co. 171
Kelly, John Eoghan 187
Kelly-Springfield Tire Co.
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co. Inside Front Cover
Kerr, John B. 187
Keuffel & Esser Co. 185
Kewanee Boiler Co.

K

Key Boiler Equipment Co.
Kinley, M. M., Co.
Kirk & Hoover 186

L

Landis Machine Co. 101
Larkin & Co. 125
Layne & Bowler Co.
Leidecker Tool Co.
Leschen, A., & Sons Rope Co.
Linde Air Products Co. 1
Link-Belt Co.
Longyear, E. J., Co. 174-187
Lucey Mfg. Corp.
Ludlow Valve Mfg. Co. 172
Lufkin Rule Co. 188
Lunkenheimer Co. 69

Mc

McCord Radiator & Mfg. Co. 104-183
McGregor Working Barrel Co. 185
McIntosh & Seymour Corp.
McJunkin Supply Co.
McKee, Arthur G., & Co.
McNutt, V. H. 187

M

Magnolia Petroleum Co.
Maloney Tank Mfg. Co. 139
Manzel Bros. Co.
Marion Machine Foundry & Supply Co.
Marsh Gauge Pole Co. 184
Master Builders Co. 59
Mathieson Alkali Works, Inc.
Matson, George C. 187
Maverick, Phillip 188
Meier, E. C., Lubricating Co.
Merco Nordstrom Valve Co.
Meriam Co. 87
Messimer, H. H. 187
Metric Metal Works
Midwest Piping & Supply Co.
Miller Improved Gas Engine Co. 6
Miller, Max B., & Co., Inc.
Mineral Exploration Co.
Mine Safety Appliance Co.
Missouri Wood Working Co. 186
Moon Mfg. Co.
Moore, Lee C., & Co., Inc. 43
Mosher Metal Products Corp.
Munn & Co. 186
Murray Rubber Co. 177
Murray Tool & Supply Co.
Myers, F. E., & Bro. Co. 187

N

Nabors, W. C., Co. 144
National Carbon Co., Inc. 1
National Gas Products Corp.
National Lead Co. 129
National Petroleum Engineering Corp. 187
National Petroleum Marketers Assn.
National Pigments & Chemical Co. 144
National Supply Co. 112-113
National Transit Pump & Machine Co. 119
National Tube Co.
National Turnbuckle Derrick Co.
Newton Process Mfg. Co. 33-97
Norris Bros., Inc. 176
Norris, W. C.
North American Car Co.
Northern Fire Apparatus Co.
Northern Oil Information Bureau 186
Northrup Equipment Co.
Nuttall, R. D., & Co. 7
Nye Tool & Machine Works

O

O'Brien Steel Construction Co.
Oertling, L., Ltd. 178
Ohio Mid-Cities Corp.
Ohio Steel Foundry Co.
Oil Conservation Engineering Co.
Oil Country Specialties Mfg. Co.
Oil Insurance Association 65
Oil Well Supply Co.
Oklahoma Armature Repair Co.
Oklahoma Portland Cement Co. 85
Oklahoma Steel Casting Co.
Oxweld Acetylene Co. 1

P

Parkersburg Machine Co.
Parkersburg Rig & Reel Co. 118
Partrige-Scotford Stamp & Stencil Co.
Patrick, R. S. 141
Pattin Brothers Co.
Penberty Injector Co. 142
Pennsylvania Engineering Works
Petroleum Appliance Co. 171
Petroleum Iron Works
Pfarzheimer, Carl H., & Co. 140
Pickering Governor Co.
Pittsburg Boiler & Machine Co. 145
Pittsburgh-Des Moines Steel Co. 178
Pittsburgh Meter Co. 140
Pittsburgh Steel Products Co.
Pilbrico Jointless Firebrick Co.
Plymouth Cordage Co. 175
Porter & Co. 37
Powell, William Co.
Power Mfg. Co.
Power Piping Co. 85
Power Plant Equipment Co.
Power Specialty Co.
Prescott Co., The 15
Prest-O-Lite Co., Inc., The 1
Pure Oil Co. 17
Pyle-National Co.

R

Ranney Oil Mining Co. 187
Ratigan, J. P., Co.
Reading Iron Co.
Reading Steel Casting Co., Inc.
Reed Roller Bit Co. 108
Regan Forge & Engineering Co. 135
Reid, Joseph, Gas Engine Co. 126
Republic Flow Meters Co.
Republic Iron & Steel Co. 57
Republic Supply Co.
Rich, John L. 186
Ridge Tool Co.
Ring, DeWitt T. 188
Ritts-Conley Co. 188
Robinson, A.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Ross-Meehan Foundries
Ryerson, Joseph T., & Son, Inc. 186

S

Safety Pulling Machine Co. 109
Sargent Engineering Corp., The
Shaffer, J. E., Co. 145
Shaffer Tool Works
Shaw, S. F. 185
Sheffield Steel Corp.
Sherwin-Williams Co.
Shippers' Car Line Corp. 184
Simplex Equipment Co.
Sinclair Refining Co. 161
Sivyer Steel Casting Co.
Skelly Oil Co.
Smith, A. O., Corp.
Smith Separator Co. 48
South Chester Tube Co.
Southern Cornice Works 188
Southwestern Engineering Corp. 179
Southwestern Engineering Co., Inc.
Spang & Co.
Spang, Chalfant & Co., Inc. 4
Spence Machine Co.
Spencer Trailer Co.
Stalder, Walter 187
Standard Engineering Co. 141
Stanley Belting Corp.
Star Drilling Machine Co.
States Engineering Co., The 182
Stearns-Roger Mfg. Co.
Strom Steel Ball Co.
Sullivan Co., The 119
Sullivan Machinery Co. 182
Superior Tube Co.

T

Taubman Supply Corp.
Templeton, Kenly & Co., Ltd. 147
Texas Company, The 23
Timken Roller Bearing Co.
Titusville Forge Co.
Titusville Iron Works 24
Toledo Pipe Threading Machine Co. 183
Trimont Mfg. Co.
Trumble Gas Trap Co.
Truscon Steel Co.
Tulsa Boiler & Machinery Co. 95
Tulsa Sheet Metal Co. 87
Twin Disc Clutch Co.

U

Union Machine Co
United Alloy Steel Corp.
United Iron Works, Inc.
United States Cast Iron Pipe & Fdy. Co.
United States Rubber Co.
Universal Oil Products Co. 41
U. S. Tool Co.

V

Van Couvering, M. 188
Victaulic Co. of America
Vogt, Henry, Machine Co. 8
Volz Engineering Equipment Co.

W

Wall Rope Works, Inc.
Walsh & Weidner Boiler Co.
Walworth Co.
Warren Petroleum Co.
Waukesha Motor Co.
Westcott & Greis
Western Machinery Co. 177
Western Supply Co.
Westinghouse Electric & Mfg. Co. 2
Wheeling Steel Corp. 13
Wickwire-Spencer Steel Co.
Wico Electric Co.
Williams, Herbert E. 188
Williams, J. H. & Co.
Williamsport Development Co. 187
Williamsport Wire Rope Co. 18
Williams Tool Corp.
Wilson Oil Tools Corp. 5
Wilson Welder & Metals Co. 132
W-K-M Company, Inc.
Wood & Wood 187
Worthington Pump & Mach. Corp.
Wright Mfg. Co. 179

Y

Yale & Towne Mfg. Co.

Z

Zero Hour Torpedo Co.

WHAT AND WHERE TO BUY—PAGES 189-190-191

XUM

The Oil and Gas Journal

PRODUCING REFINING MARKETING

VOL. 25. NO. 16. TULSA, OKLAHOMA, SEPTEMBER 9, 1926

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TABLE OF CONTENTS

SPECIAL ARTICLES

Big Increase Comes From Gulf Coast 27
By James McIntyre
Light oil production falls 700 bbls. but total output increases 33,329 bbls. a day. Panhandle stationary.

Underground Survey of Deepest Well 29
By Alexander Anderson
Hole in Chanslor-Canfield-Midway Oil Co.'s California well 517 feet off vertical at 6,000 feet.

Federal Oil Board's First Report 30-31
Recommends legislation permitting co-operative field development and production control.

Brilliant Future for Petroleum 31
By L. M. Fanning
Chemical society president says it will furnish products for diversified uses.

Runs to Stills Highest in Year 32
By Neil Williams
Crude throughput at Mid-Continent Refineries September 1 shows increase of 13,020 barrels.

Motor Fuel Substitutes (Editorial) 34

Technical Questions Answered 36
By Dr. C. K. Francis

Deep Wells in Southern California Due to Exceptional Conditions 38

Doherty Takes Sharp Issue With Hughes 38
By Charles E. Kern
Reiterates belief Congress and Federal Government have power to regulate oil industry.

Port of Corpus Christi to Facilitate Oil Movement 39

Operating the Largest Gasoline Plant 73
By C. O. Willson
No. 6 of Sinclair Oil & Gasoline Co. has many interesting features.

First Refiner Anticipated Future 170
By B. Silliman, Jr.
Professor Silliman before Drake drilled first well wrote article outlining developments since.

Capillary Control in Fluid Delivery 178
By Stanley C. Herold

FIELD OPERATIONS

Good Completions in Proven Areas 39

Late Fields 39

North Texas and Panhandle 40-42
By C. D. Lockwood

Oklahoma 42
By J. L. Dwyer

Kansas 44
By J. L. Dwyer

Southwest Texas 46
By B. D. Stevenson

Louisiana-Arkansas 49
By James H. Dameron

Farmington, New Mexico 49
By Special Correspondent

Artesia, New Mexico 50
By Special Correspondent

Gulf Coast 53
By P. L. McGreal

California 54
By L. P. Stockman

Rocky Mountain Area 56
By Frank B. Taylor

Canada 56
By Victor Lauriston

Pennsylvania-West Virginia 58
By D. S. Wakenight

Michigan 58
By Whit

Central West 60
By Whit

Kentucky-Tennessee 60
By Whit

REFINING AND MARKETING

Oklahoma Market Continues Strong 28
By Neil Williams
Gasolines and fuel oils receive further price advances. Kerosenes, gas oil and distillates unchanged.

Good Demand in Chicago 150
By J. B. Waldo

Eastern Market Somewhat Mixed 151
By N. O. Fanning

Use Pipe Still to Reduce Fuel Oil 152
By C. O. Willson
Kanotex installation secures 75 per cent recovery of gas oil, Gray polymerizers with Jenkins units.

Refining and Marketing News 154

Plant Operators' Page 156

Refinery and Crude Prices 158-159

Tankwagon Quotations 160

ARTICLES OF GENERAL INTEREST

The Advertisers' Index 25

Men Known in Oildom and Personals 64

Equipment and Supplies 68

Natural Gas Developments 105

Bureau of Mines Report for 1925 114

Oil Country Buying in Good Volume 134
By B. E. V. Luty

Oldest Known Sign of Oil in America 137

Classified Want Advertisements 148-149

Oil Securities Strong and Active 157
By N. O. Fanning

Recent Patents 186

What and Where to Buy 189-190-191

Crude Petroleum Statistics 192

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Refinery Section Starts on Page 150

Big Increase Comes From Gulf Coast

Highest daily average estimated production week ended May 30, 1925, 2,347,984 bbls. Lowest in 1925, January 3, 1,911,730 bbls.

Light Oil Production Falls 700 Bbls., But Total Output Increases 33,239 Bbls. a Day. Panhandle Stationary

By James McIntyre

Highest daily average estimated light oil production in 1925, week ended January 17, 1,525,220 bbls. Lowest in 1925, July 18, 1,374,173 bbls.

The curve of light oil production which has been pointing upward since the middle of July, and which has had a 220,000-barrel climb since the first of February, slanted slightly downward in the past week, a falling off of 700 barrels a day being noted as compared with the record of the week before. On the other hand, the total production of the United States jumped 33,239 barrels a day upward, principally owing to increases in Spindletop and some other Gulf Coastal pools, which in the aggregate show an increase of 31,465 barrels a day.

The Texas Panhandle stopped to get its breath, so to speak, and production in that area was 589 barrels a day less than for the previous week.

It is quite possible that the approaching Labor Day holiday helped to slow up field developments and delay completions that might have further increased production, and that this week may also feel the effect of the holiday, but to a lesser degree. It was not the number of wells in the Gulf Coast Field that boosted production there, but the enormous flush production of those that were completed. The Lockport, La., area came to the front with an 8,000-barrel initial producer, which will rivet attention to that pool.

Production at this time is about 90,000 barrels higher than the average production in September a year ago and nearly 71,000 barrels higher than the daily average of the corresponding week in 1925. It is noteworthy, however, that the production of the Gulf Coast area, which is such a large factor in the present day increase in the visible supply of new crude is over 95,000 barrels a day higher than it was in the same week last year, which would indicate that leaving Gulf Coast out of the picture we have a smaller production by 24,000 barrels a day than we had at this time last year. The tremendous falling off of Smackover (both light and heavy) in the past year, a drop of 75,000 barrels a day, has been an important factor in the change in the production situation.

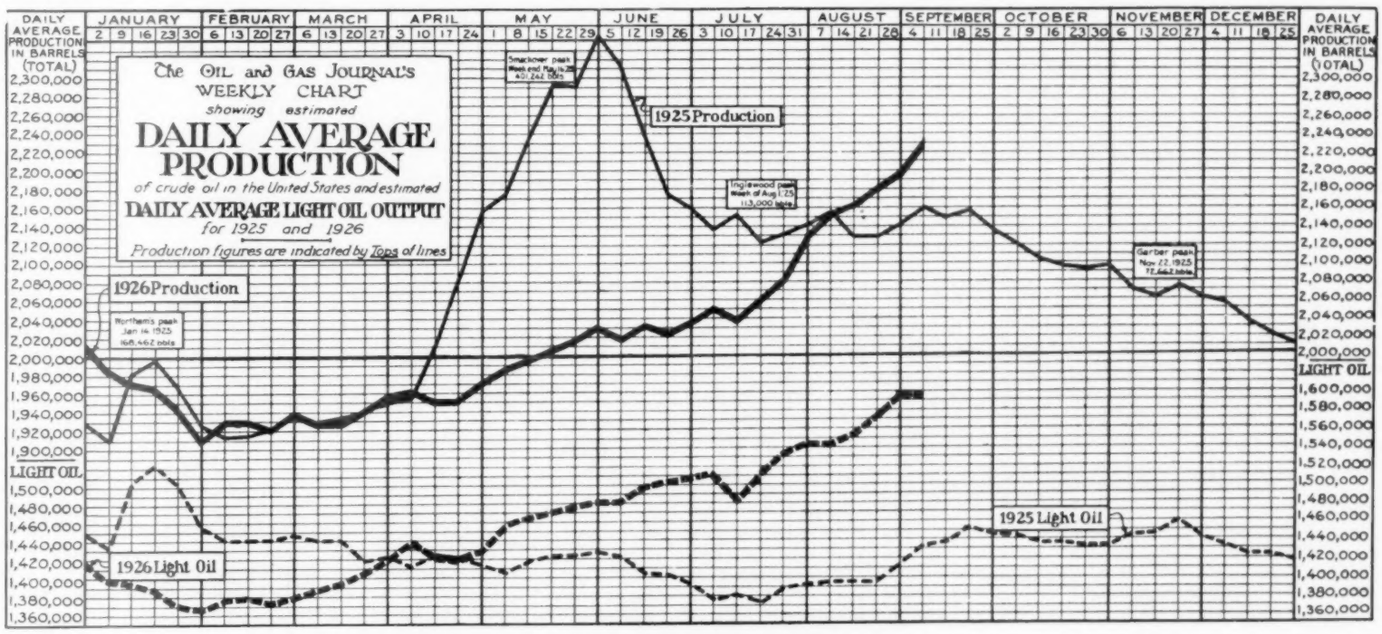
The recent action of the Texas Railroad Commission in granting permission to an oil producing company in the Panhandle to store its surplus crude in natural canyons in Hutchinson County, if it is made general, might cause a very large increase in production in that field, but the oil would not be available to the general market because of the lack of pipeline and railroad facilities to transport it to refineries.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity crude oil in the United States for week ended September 4, and a comparison with the previous week follows:

	Sept. 4		Aug. 28	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	39,669	.....	37,280	.....
Burbank	48,540	.....	49,180	.....
Other Osage Fields	34,260	.....	34,115	.....
Cushing and Shamrock	21,520	.....	21,540	.....
Bristow and Eastern Bristow	27,820	.....	27,930	.....
Cromwell	15,860	.....	16,155	.....
Garber	31,370	.....	33,385	.....
Blackwell-Braman	23,040	.....	25,090	.....
Seminole	15,630	.....	13,870	.....
Wewoka	32,310	.....	31,355	.....
Northern Miscellaneous	111,100	.....	112,865	.....
Southern Fields	65,650	.....	65,645	.....
Total Oklahoma	466,760	.....	468,410	.....
North Louisiana	41,900	14,900	42,574	14,311
Arkansas—				
Smackover	14,890	122,610	14,940	121,135
Miscellaneous	19,450	.....	19,702	.....
Total Arkansas	34,340	122,610	34,642	121,135
North Central Texas	184,835	.....	181,865	.....
Texas Panhandle	116,101	.....	116,690	.....
Powell	28,300	.....	28,600	.....
Mexia, Currie, Richland	14,650	.....	14,800	.....
Nigger Creek	19,400	.....	16,500	.....
Wortham	6,800	.....	6,700	.....
Kansas	112,750	.....	112,315	.....
Total Mid-Continent Area	1,025,836	137,510	1,023,096	135,446
Gulf Coast	.....	199,175	.....	167,710
Southwest Texas	.....	16,360	.....	45,950
Eastern	108,500	.....	108,175	.....
Rocky Mountain Area	110,310	.....	112,075	.....
California—				
Santa Fe Springs	48,500	.....	49,000	.....
Long Beach	101,000	.....	105,000	.....
Huntington Beach	45,000	.....	45,000	.....
Torrance	5,000	23,000	5,000	23,000
Dominguez	21,500	.....	21,000	.....
Rosecrans	15,000	.....	15,000	.....
Inglewood	26,000	19,000	26,000	19,000
Ventura Avenue	49,500	.....	48,000	.....
Remainder of State	41,500	210,000	41,000	210,000
Total California	353,000	252,000	355,000	252,000
Total United States	1,597,646	635,045	1,598,346	601,106
Grand Total	2,232,691		2,199,452	

Total Increase, 33,239 Bbls.; Light Oil Decrease, 700 Bbls.



WHAT AND WHERE TO BUY—PAGES 189-190-191

Oklahoma Market Continues Strong

Gasolines and Fuel Oils Receive Further Price Advances. Kerosenes, Gas Oil and Distillates Remain Unchanged

By Neil Williams

There were no developments of importance in the Oklahoma (Group 3) refined market the past week. Gasoline and fuel oil prices were somewhat higher but on the whole market conditions were unchanged from those of the previous week. Natural gasolines continued steady and firm as did all other products except wax.

Inquiries for all products, except possibly the 60-62 400 gasoline, were considerably easier but this was not viewed with alarm by market students. The slower motor fuel movements were attributed largely to a natural lack of interest preceding a holiday period and a temporary period of fairly active buying in anticipation of Labor Day requirements.

Kerosene and heavier end products continued very stiff despite the slowing up in trading and refiners were able to get still higher prices for fuel oil during the week. The scarcity of these materials prevented feeling of any immediate recession as a result of the slight lull.

Failure of anything of importance to materialize in Group 3 markets during the week and the closing of virtually all Tulsa offices of both buyers and sellers Monday have left the actual market situation slightly uncertain at this time. It probably will be several days before the effect, of the holiday motor consumption of gasoline is felt on the market here.

Weather Unfavorable

Early reports on the consumption of gasoline over the week-end are not especially favorable as the greater part of the Mid-Continent's marketing territory was swept by heavy rains and storms.

REFINED MARKET BAROMETER

Refined markets east of the Rocky Mountains on the whole continued firm to strong the past week, especially kerosene and the heavier products which have been aided by an active demand and limited supplies. Gasolines, however, were spotted in the east due to retail price cutting and large stocks. Some improvement was shown in the California market as a result of a better movement, both domestic and export. Mid-Continent gasolines were strong although a slackening in inquiries was felt. Kerosene was generally steady as were fuel oils, gas oil and distillates. The scarcity which has existed for some time east of the Rocky Mountains still was apparent and these products were especially strong. Lubricating oils, however, continued extremely spotted both as to grades and as to districts. Natural gasolines were unchanged.

Mid-Continent—Mid-Continent refinery markets the past week did not show any general changes. Gasolines, including naturals, were slightly higher in all areas. Fuel oils also were stronger except in North Texas. Kerosene was not as actively in demand but the product was generally scarce. Other products unchanged.

Atlantic Seaboard—Eastern markets were somewhat mixed although the general trend continued firm. Gasoline was spotted due to retail price cutting. Kerosene strong and scarce. Gas oil in better demand as are cylinder oils. Wax easier. No other changes.

Pennsylvania—Gasolines showed improvement after slight weakening. Neutrals continued in good demand and cylinder stocks inactive. Kerosene strong. Fuel oil and wax holding their own.

Chicago—Gasoline prices higher. Demand for kerosene, gas oil and fuel slipped but products still strong. Lubricant consumption large.

California—Gasoline showed improvement with heavier demand, both export and domestic. Natural gasolines easier but prices firm.

Gulf Coast—Additional grades of pale and red lubricating oils advanced, following scattered increases of last two weeks.

Just how much gasoline jobbers disposed of is problematical but this will be an important factor in determining the trend for the next several weeks as jobbers stocked up fairly heavy the last of August in anticiaption of a large Labor Day consumption.

It was this buying which caused gasoline to strengthen as it has, and the possibilities of additional buying after the holiday by jobbers seeking to replenish stocks was responsible for the good outlook for the entire month of September. If jobbers have been unable to dispose of the gasoline they purchased trading will not be as heavy as expected, market students point out.

However, Oklahoma refiners, as well as the majority in the entire Mid-Continent, are reported in an exceptionally good position, which, with any buying at all, may enable them to maintain steady markets the greater part of the month.

Statistical Situation

As shown in an accompanying table, based on the latest monthly report of the United States Bureau of Mines the Mid-Continent statistical situation as of July is considerably improved. The figures show that crude runs to stills during July were 3,539 bbls. less daily than during June and that stocks of gasoline were reduced 29,757,000 gallons despite an increase in production of 7,287,000 gallons.

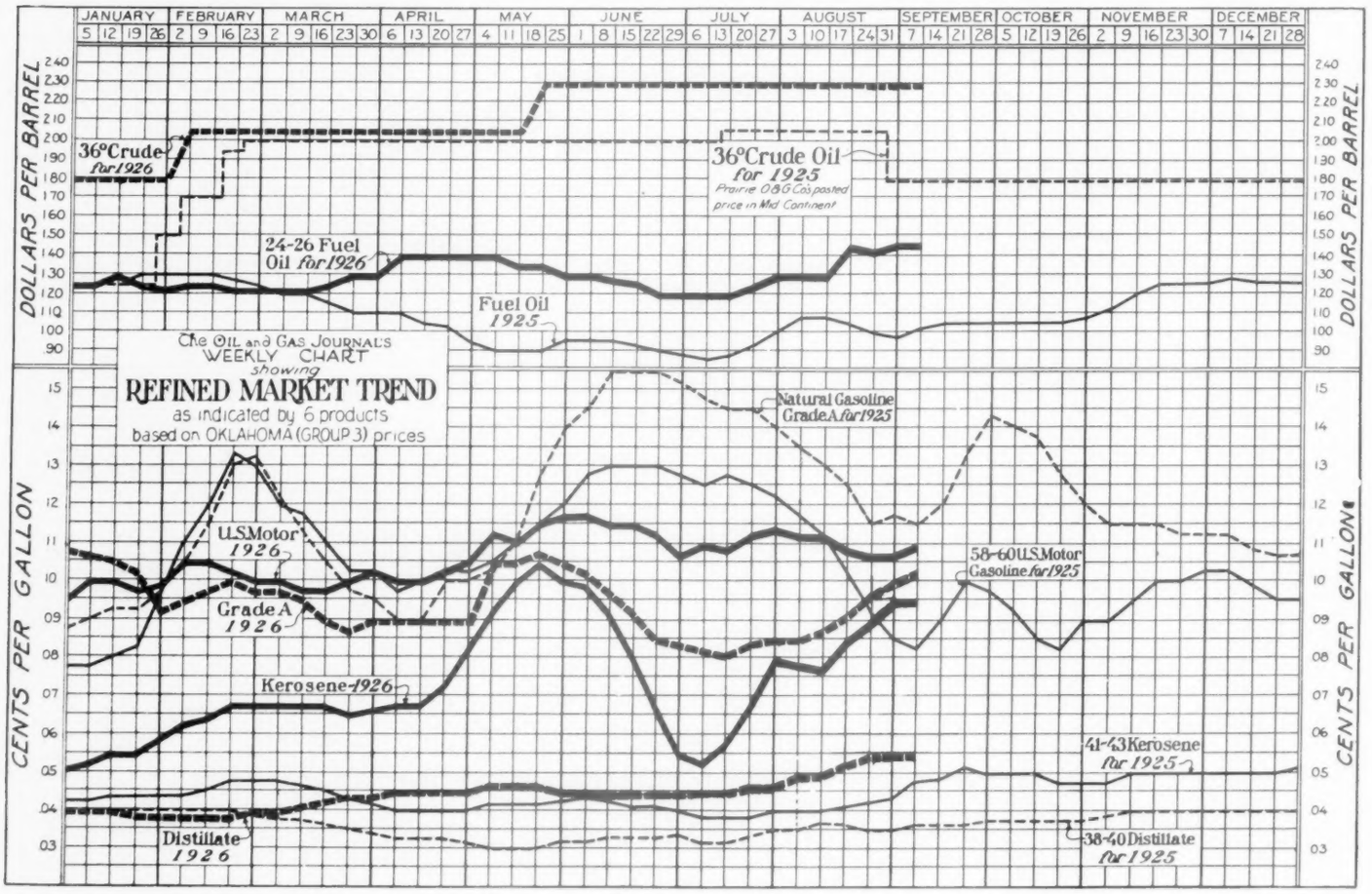
Gasoline stocks also were more than 15,000,000 gallons less than at the same

(Continued on page 167.)

*SUMMARY OF MID-CONTINENT STATISTICAL SITUATION BASED ON BUREAU OF MINES REPORTS

	Daily Crude Runs to Stills Barrels	Gasoline Produced	Gasoline Stocks Last Day of Month	Kerosene Produced	Kerosene Stocks Last day of Mo.	Gas and Fuel Oil Produced	Gas and Fuel Oil Stks. last day Mo.
July, 1926	420,451	245,459,000	141,177,000	38,978,000	29,132,000	236,435,000	283,540,000
June, 1926	423,990	238,172,000	170,934,000	41,433,000	33,048,000	222,345,000	243,987,000
July, 1925	199,742	253,336,844	156,482,259	46,455,290	44,343,596	261,634,042	254,813,689

*All data given in gallons for entire month, except crude runs to stills.


JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
DOLLARS PER BARREL
36°Crude for 1926
24-26 Fuel Oil for 1926
36°Crude Oil for 1925
Prairie O&G Co posted price in Mid Continent
Fuel Oil 1925
The Oil and Gas Journal's WEEKLY CHART showing
REFINED MARKET TREND
as indicated by 6 products based on OKLAHOMA (GROUP 3) prices
CENTS PER GALLON
U.S. Motor 1926
Grade A 1926
Kerosene 1926
Distillate 1926
Natural Gasoline Grade A for 1925
58-60 U.S. Motor Gasoline for 1925
41-43 Kerosene for 1925
38-40 Distillate for 1925

Underground Survey of Deepest Well

Hole in Chanslor-Canfield Midway Oil Co.'s No. 96 Olinda, Calif., Shown to Be 517 Feet Off Vertical at 6,000 Feet

By Alexander Anderson*

A survey for deviation and direction of the Chanslor-Canfield Midway Oil Co.'s No. 96 Olinda in Orange County, California, the deepest well in the world, with the Anderson Oil Well Survey Apparatus, shows the hole to be 517 feet off vertical at 6,000 feet.

Below 6,000 feet the well swings back toward the plumb line and is 348 feet off vertical at 6,948 feet.

The inclination of a line joining the derrick floor to the position of the hole at 6,948 feet is 2 degrees 55 minutes (5.1 feet per 100) from vertical.

The survey of the well, which at this writing extends to a measured depth of 6,948 feet, will be completed when drilling is stopped.

On May 21, 1926, an Anderson oil well survey machine was lowered into the well on 3-inch drill pipe to a measured depth of 6,522 feet. Seventy-three stands of drill pipe and a single went into the well.

After each stand was lowered, the survey machine automatically made a photographic record. An additional reading was taken at the bottom of the hole, making a total of 74 photographic survey readings.

The survey machine went into the hole at 8:45 a. m. and reached bottom at 3:50 p. m. Deducting a 20 minutes stop for lunch, the actual survey time was 6 hours and 45 minutes for 6,522 feet of hole.

On July 11, when the hole was 1,000 feet deeper, the machine was again run to bottom.

Unexpectedly high temperatures in the well incapacitated the batteries inside the machine, and the photographic record ceased at a measured depth of 6,948 feet. This depth, corresponding to 78 stands of pipe, is the extent of the present survey.

Laboratory tests on similar cells indicate that the temperature in the well may have been around 212 degrees Fahrenheit but it is expected that, with improved insulation inside the machine, the hole can be surveyed to 8,000 feet.

Features of Underground Course

The upper part of the hole, from the derrick floor down to the forty-second survey reading at a measured depth of 3,751 feet, follows a weaving course, with a general direction of southeast.

This part of the hole has an average inclination of 5 degrees 34 minutes (9.7 feet per 100) from vertical.

After passing 3,751 feet, the slope of the hole makes a change to a northeasterly direction and follows this line down to a measured depth of 5,962 feet at survey reading No. 67.

In this part, the hole has an average inclination of 11 degrees 24 minutes (19.76 feet per 100.)

At 5,962 feet the hole swings around to the general direction north 75 degrees west and maintains this course to 6,948 feet, which is the lowest point reached by the survey.

The average inclination of this third leg of the hole is 20 degrees 10 minutes (34.5 feet per 100.)

The data sheet shows a sharp break in the inclination of the hole at the point where the drift changes from northeast to northwest.

It is remarkable that readings No. 67 and No. 69 give inclinations of 13 degrees 35 minutes and 12 degrees 40 minutes, respectively, while the intermediate reading No. 68 records an inclination of only 6 degrees 10 minutes.

This kind of "nose dive" is frequently associated with sharp changes in the direction of wells underground.

Causes of Changes in Direction

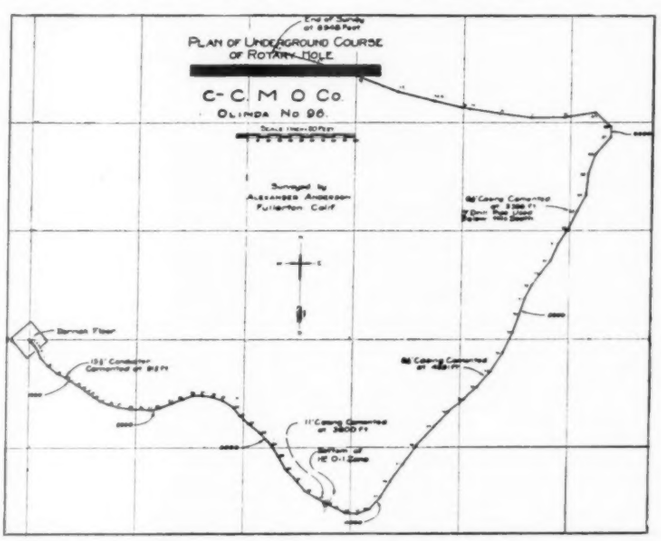
The plan shows the southeasterly part of the hole to have a weaving course.

The courses of the succeeding northeasterly and northwesterly legs of the hole are much straighter.

The changes in direction between the first and second parts of the hole are associated with the passage of the hole below the lowest known productive zone on the lease and is apparently due to the well passing out of the Fernando into the Puente formation.

The northeasterly and northwesterly legs of the hole are seemingly quite distinct features when viewed on the plan. The glass model, however, affords a better view of the path of the hole.

The model shows very beautifully that, from around reading No. 43 at 3,839 feet to bottom, the entire path of the hole lies almost exactly in a single inclined plane.


PLAN OF UNDERGROUND COURSE OF ROTARY HOLE
C-C M O Co
OLINDA No 96
Surveyed by ALEXANDER ANDERSON Fullerton Calif
Barren Flow
13½" Casing Cemented at 2871
16" Casing Cemented at 3839 Ft
11" Casing Cemented at 3600 Ft
Bottom of 10" Oil Sand

The impression obtained from the model is that all of the hole below the point of change from southeast to northeast is drilled in the same series of rocks.

The fact that all the core samples in this part of the hole have been assigned to the Puente formation confirms this impression.

Although the two lower legs of the hole appear to form a single unit in its course, the remarkable curve, which connects the two parts of this unit, calls for some remark.

Four-inch drill pipe had been used down to a depth of about 5,630 feet, where the 6¼-inch casing was cemented.

Immediately below this depth, at reading No. 64, drilling the hole with 3-inch drill pipe, the course of the well becomes irregular.

It looks as though the weaker drill pipe could not hold the bit on its former straight northeasterly course. By making a nose dive and turning to a northwesterly line the bit found an easier direction of advance. With the change to the new direction the hole is departing from vertical much more rapidly than it did where larger drill pipe was used.

Applications of Underground Surveys

Passing from the description of the above survey to a brief consideration of some of the practical applications of the work, based on some of the facts disclosed, reference is made to a previous article by F. M. Smith as well as to the writings of others whose names appear in the text.

The underground survey shows correction of 143 feet on logged depth of a comparatively shallow oil sand. The bottom of one of the lower oil zones penetrated by well No. 96 is logged at about 3,575 feet. At this point the well has drifted 316 feet in a southeasterly direction. The formations are known to have a dip of 35 degrees to the west. The actual depth vertically below the derrick floor of the bottom of this oil zone is therefore 3,718 feet. The difference between 3,718 and 3,575, or say 143 feet, is the error in the log at this depth.

It may be noted that the data sheet shows that reading No. 40 was taken at a measured depth of 3,575 feet and that, owing to the inclination of the hole, the actual vertical depth is 3,555 feet.

The amount of 20 feet, by which these two quantities differ, is comparatively insignificant. The error of 143 feet, above, is mainly due to the drift of the hole up the slope of the oil sand.

Suverkrop describes an interesting case of a dry hole, located near a producing well on a steep monoclinal structure. Both wells had the same measured depth and the conditions could not be explained.

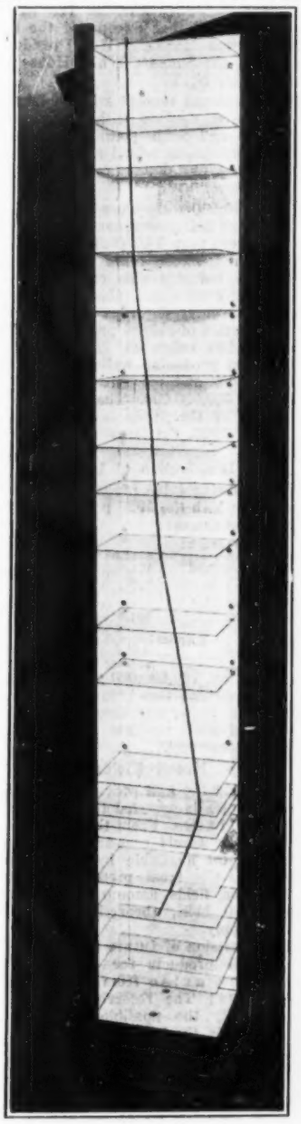
Both wells were surveyed: the producer was found to be nearly vertical, the dry hole had an extensive drift against the structure. The survey showed that the dry hole had passed through the oil sand at a much shallower depth and had been completed far below the productive horizon.

Many dry holes and many failures to shut off water are simple cases of bad correlation caused by the underground drift of wells.

Wildcat Wells

When a dry hole is surrounded by production, it is natural to suspect an unusual condition. When, however, a wildcat well, or a well drilled ahead of production, is reported dry, the territory may be wrongfully condemned without any question of the direction and amount of penetration of the hole. An accurate underground survey of every wildcat well is indicated as worthwhile. The survey data, filed along with the well log, will greatly strengthen the evidence on the test.

As showing the irregularity of many acres in distribution of wells on oil sand



The glass model of the Chanslor-Canfield-Midway Oil Co.'s No. 96 Olinda in the Fullerton, Calif., Field, showing the course downward of the deepest cable or rotary-drilled hole in the world, is said to be the first scale model of well ever constructed. It is of paramount interest as some facts regarding the true shape of the course taken by the lower part of the well obtained from a study of the model, would certainly have remained unknown without its aid.

well No. 96 Olinda in the sand at around 3,575 feet, measured depth, is 316 feet out of plumb. It may be said that the derrick is standing in the center of an area 632 by 632 feet (9.16 acres) and draws production from one edge of this area. Should production be developed at a measured depth of 6,000 feet, where the drift carries the well to its maximum distance of 517 feet from the derrick

(Continued on Page 168)

†The writer desires to express his tanks to the Chanslor-Canfield Midway Oil Co. for permission to use the survey data and photograph of the glass model which are published in this article.

*Mining and petroleum engineer, Fullerton, Calif. Patentee and operator of the Anderson Underground Oil Well Survey Apparatus.

Federal Oil Board's First Report

Recommends Legislation Permitting Co-Operative Field Development and Production Control. Nation's Oil Needs

By C. E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Sept. 6.—The first or preliminary report of the Federal Oil Conservation Board, dealing with national petroleum conditions, was today made public by Secretary Work, chairman of the board, who, at the same time, announced that a copy of the report had been transmitted to President Coolidge at the Summer White House at Paul Smiths, N. Y.

Two additional reports will be issued by the board, dealing with foreign oil conditions, and with possible substitutes and development of oil shale.

The first or preliminary report is given in part below:

About 300,000 wells were producing in 1925, the oil being transported from the wells by more than 40,000 miles of trunk pipelines and 40,000 miles of gathering lines. The industry also employs some 142,000 tank cars and about 400 tank steamships for crude transportation and for distribution of refined products. There are some 500 refineries. The total investment in producing wells, transportation, refining and marketing equipment exceeds $9,500,000,000. The total wholesale value of the products was $1,793,700,087 in 1923, the latest figures available.

Distribution of Use

The following table indicates the fractions into which the 1925 production was split by refinement:

Gasoline, straight distillation	7,294,000,000 gals.	23.4%
Gasoline, cracked	2,824,000,000 gals.	9.1%
Kerosene	2,510,000,000 gals.	8.1%
Lubricants	1,301,000,000 gals.	4.2%
Gas and Fuel Oil	15,279,000,000 gals.	49.3%
Wax	591,000,000 lbs.	
Coke	991,000 tons	1.7%
Asphalt	2,633,000 tons	
Other fin. oils	339,906,000 gals	1.1%
Losses	952,000,000 gals.	3.1%

In addition, 760,000,000 gallons of natural gas gasoline was brought to the refineries and either run through the stills or blended with gasoline to produce a finished motor fuel.

Known Fields

The producing and proved area in the United States is asserted to be in excess of 3,000,000 acres. From the most recent estimates, it would appear that the reserves of oil available by flowing and pumping wells from present producing and proven fields amount to about 4,500,000,000 bbls., theoretically but six years' supply.

The provision of future supplies of essential oil products for the American people must arise from the following sources: (1) The reserves above mentioned; (2) the possible discovery of new sands in the known areas by deeper drilling; (3) the possible discovery of new fields; (4) improved methods which will recover a larger proportion of the oil out of the sands; (5) better utilization of crude oil by diversion from less essential to more essential uses—such as conversion of fuel oil into gasoline; (6) better control of the flush flow from newly discovered fields; (7) economies in consumption by improved mechanical devices; (8) supplies from distillation of oil shales and coal; (9) foreign oil fields.

Possible New Fields

Certain parts of the country are known by their geology to be impossible of appreciable oil production. Such positively barren areas are estimated to aggregate 43 per cent of the total area of the United States. But this does not warrant the assumption that the remaining 1,100,000,000 acres of the country, or any large part of them, will be found oil bearing. To assert that no new fields will be found would be to deny a very strong law of probabilities. And we may conclude that such fields will be found, but obviously no forecast of their importance can be given.

Improved Methods of Recovery

There is a wide variation in estimates of the amount of oil left underground in the sands after production ceases with ordinary methods of flowing and pumping which have been hitherto employed. The evidence before this board shows the general belief of oil experts that not more than 25 per cent of the oil can be recovered by ordinary methods. Some leading authorities consider that less than one-sixth of the oil is so recovered. During recent years, a considerable amount of investigation and experimentation has been made with different methods of forcing out the contained oil with water, air, or gas pressure—either directly from the surface or through the proposed method of sinking shafts and driving galleries underground.

Better Utilization of Crude

The most essential products from our crude oil are lubricating oil, gasoline and other oils for internal combustion engines. The other uses for oil could be dispensed with, without an industrial revolution as other fuels and substitutes could be applied without prohibitive differentials in economic costs. At the present time, about one-half of our crude oil production is burned either as crude oil or as fuel oil to generate steam and heat—the remainder is used as kerosene, gasoline, lubricating oil, etc.

The division of crude as between the different kinds of oil products is purely an economic question. There is already a tendency to displace heating oils by coal, and at a sufficiently higher demand for gasoline the fuel oils can be largely converted into supplies for internal combustion engines. The discoveries in methods of cracking oil are of fundamental importance in considering the future of our essential oil supplies. And this conversion in itself comprises a potential of assured gasoline supplies.

It may be contended that a control of production by which supplies would be reduced so increase the price as to force the production of gasoline instead of so large fraction of use as fuel oils. This program, however, raises impossible difficulties in artificially increased prices to the consumer, inability to regulate the flow accurately to the demand, and the ultimate necessity to regulate profits in order to protect the consumer.

Better Mechanical Devices

It is certain that many of the gasoline engines are inadequately designed to secure the most economic use of gasoline. It is estimated that 25 per cent of the gasoline could be saved and the same mileage of movement provided if there were more adequate designs of carburetors and engines. These factors in engine construction have been steadily improving over many years and, no doubt, will still continue to improve. Their improvement will be expedited if there should be a tendency of gasoline prices to rise.

Foreign Sources of Oil

While the production of oil upon our own territory is obviously of first importance, yet in failure of adequate supplies the imports of oil are of vast moment. The present imports from Latin American fields amount to about 62,000,000 bbls. annually of crude oil, against which we export about 94,000,000 bbls. of products. The fields of Mexico and South America are of large yield and much promising geologic oil structure is as yet undrilled. That our companies should vigorously acquire and explore such fields is of first importance, not only as a source of future supply, but supply under control of our own citizens. Our experience with the exploitation of our consumers by foreign controlled sources of rubber, nitrate, potash and other raw materials should be sufficient warning as to what we may expect if we shall become dependent upon foreign nations for our oil supplies. Moreover, an increased number of oil sources tends to stabilize price and minimize the effect of fluctuating production.

Supplies From Oil Shale and Coal

The by-product distillation of coal for coke and gas purposes produces a certain amount of oil. The whole of the coals adapted for this purpose, however, would not furnish an appreciable substitution of our liquid-oil supplies.

Reinforcement of Supply

The major part of the measures that must be taken to protect our future supplies must rest upon the normal commercial initiative of private enterprise. The field for Governmental action is considerable, but to formulate the broader by-laws of the industry in the sense of conservation and to concentrate thought upon them, is the major part of the board's task in co-operation with the industry.

The directions in which industry can contribute to assured future supplies are:

(1) Continued exploration for extension of known sands and deeper sands in known fields.

(2) Continued exploration for new fields.

(3) Systematic research and experiment upon methods of securing a larger proportion of the oil from the sands.

(4) Systematic research and experiment in new methods and cheapened costs in refining and cracking oils and waste elimination.

(5) Co-operative methods in sane development of new fields to prevent wasteful flush flow and overproduction.

(6) Research and application by engine builders of more economical use of petroleum products.

(7) Expansion of American holdings in foreign oil fields.

The contributions which the Government can make are considerable:

(1) Continued and expanded research by the Geological Survey in geologic studies of the accumulation of oil and structures of oil-bearing areas; by the Bureau of Mines into methods of producing and refining—including oil shales; and by the Bureau of Standards into questions of constitution and utilization of oil products.

(2) The more intelligent handling of Government-controlled oil sources on public Indian lands.

Of the fundamental conservation measures above mentioned, that of co-operative methods in development of new fields to prevent temporary gluts, merits more exhaustive discussion, as it is a promising field for important action by both industry and the Government.

Control of Flush Flow

The common right of adjoining owners to reduce to possession respective oil and gas in the pools tapped by wells drilled on their lands should involve some recognition of correlated obligations, so that in the drawing of oil and gas by one owner from the common reservoir the producer should be required to recognize the right of the neighbor to so much of the oil as is withdrawn from underneath his property, less a reasonable allowance for the cost of production, the hazard of the undertaking, and a reasonable profit on the undertaking. The right of the State under its police powers to prevent the action of one owner from working a deprivation of the rights of other owners of a common property and to prevent waste or destruction of the common property by one of the owners, seems reasonably clear.

The Right of the State

The right of the State to prevent the waste of natural resources is rendered more important in this matter by the newly discovered or at lease more widely recognized facts regarding the role of gas in the oil sands. Gas is more than a commodity of smaller commercial value associated with oil; it is the efficient agent provided by Nature for bringing the oil within the reach of man. Dissolved in the oil, the gas makes the oil

REPORT IS VERY CONSTRUCTIVE, OPINION OF CHAIRMAN GEO. H. JONES

NEW YORK, Sept. 7.—George H. Jones, chairman of the Board of the Standard Oil Co. of New Jersey, commenting on the conservation board's report said:

"There is no occasion for alarm about the statement in the Federal Board's report referring to six years supply. This can only have reference to certain defined areas and I doubt whether it can refer to ultimate recovery by improved methods even from wells producing at the present time. I have been in the business for 40 years and reports of possible shortage have cropped out from time to time. I remember 25 years ago there were fears that Pennsylvania fields were giving out, but soon after oil was found in Illinois and the Mid-Continent. And so our future oil problems will be met with new and better processes. There will be deeper wells and of course, it is safe to assume there are other deposits that have not yet been touched at all.

"At the present time we have a period of overproduction. It is always under such conditions that the industry lags and brings on a reaction. With low prices there is little stimulus to the discovery of more economical processes of refinement and more thorough working of present fields. There is, of course, a limit to natural resources but there can be no question that there are still substantial deposits available and, so far as I can see, there is no need for alarm.

"The report, in my opinion, is very constructive. It indicates a willingness on the part of the Government to co-operate with the industry in husbanding of present resources and to look with approval upon the efforts of oil companies to assure themselves of future supplies by incursions into and exploitation of foreign fields. It will be observed that the report speaks of the necessity of going into foreign fields."

Oil equipment men were unanimous in declaring the reference made by the conservation report to foreign development was an outstanding feature and said this would no doubt stimulate interest and actual work in foreign fields. Reference to Mexico was considered particularly significant as production there is declining due to lack of development more than anything else.

flow more freely to the well and there forces it upward and the longer the gas is retained in solution, the larger is the recovery of oil. Waste of gas is therefore a double waste, and the impairment of the gas pressure in an oil sand by one owner may prevent his neighbors from recovering any of the oil beneath their land and himself from securing more than a small part of the oil underlying his own land.

The authority of the State to prevent the waste of natural gas has already been declared and it logically applies as well to the dissipation of gas pressure without which great quantities of oil would be entirely wasted. Geologic science and engineering practice as well as economic considerations of waste afford a broad foundation on which to base State legislation.

If the several oil-producing States should protect property rights in oil produced from a common underground supply, it undoubtedly would have some effect in the direction of stabilizing production, of retarding development whenever economic demand does not warrant, and of making the business of oil production more economical. Such legislation, although not directly regulating production, would in part accomplish this by freeing owners and operators from the present pressure of a competitive struggle.

As an Aid to Engineers

The formulation and adoption of remedial measures permitting a better correlation of underground property rights is all the more urgent in view of the present intense activity of the engineers in perfecting better methods of oil recovery. In order to accomplish something in relieving the pressure of competition before it is too late, it is suggested that the lawyers familiar with the business of the oil operators take the lead in developing the needed line of action in accord with the discoveries of science and changes in engineering practice.

The power of the Federal Government to regulate oil production is doubtless limited to its own oil lands, unless the national defense is imperiled by waste or exhaustion of the oil supply. Here the policy of reservation to meet future Federal requirements has already been established and is being perfected as prompted by increased appreciation of the need and as guided by better understanding of the means to that end. It has been suggested to the board, however, that the Government's jurisdiction as a soverign owner of the oil under its land may justify and authorize Federal legislation to prohibit adjoining owners from appropriating the oil by means of wells drilled on their property. This suggestion involves many interesting implications concerning State and Federal power, but State legislation for the protection of all owners would be preferable and the Federal authority, if any, should be invoked only when it is clear that the State is unwilling or fails to act, or when Naval reserves are threatened with depletion.

Voluntary Agreement of Owners

Another avenue of relief is the restriction of development of operation through voluntary agreement of owners. This suggestion is not novel for it has to a limited extent been tested in actual practice and can be discussed in the light of experience. Agreement between neighboring property owners as to the handling of their common property and the protection of their mutual rights is more and more generally recognized as making for economy in development and efficiency in extraction as compared with competitive drilling. Indeed, operators of experience have expressed to the board the opinion that duplication in drilling and the consequent unnecessary reduction of gas pressure constitute the cause of all waste worth mentioning in the production of oil. The danger that much of the remaining oil will be brought to the surface before either courts or lawmakers can be expected to remedy the situation has also prompted the expression of opinion to the board that voluntary co-operation offers the only practical hope.

The question of the legality of co-operative agreement has been frequently raised in the recent discussion of remedial measures. The uncertainty as to whether the economic betterment through substituting co-operation for competition runs counter to Federal and State laws has served as an actual or imagined or pretended barrier to co-operative action and the removal of that legal inhibition is asked, although the suggestion comes from the industry that "to protect the public, approval of such agreements by some commission or board should be required." This doubt should be removed by appropriate legislation.

No Monopolistic Control

The voluntary co-operation proposed would need to include the landowners and operators in a single field or pool, which is a relatively small unit of production, so that the possibility of monopolistic control need not be feared. Indeed, co-operative regulation of either the development or the operation of a single pool could control only a small percentage of the country's production. The largest flush pool in recent years—Santa Fe Springs, in California—contributed 11 per cent to the output in 1923, and no pool contributed more than 8 per cent to the output of either 1924 or 1925. Indeed, the three exceptional pools last year—Smackover, Arkansas; Long Beach, California; and Tonkawa, Oklahoma—together accounted for only 16 per cent of the country's production. Even the flood of oil from the Cushing Pool at the time of its maximum yield in 1914 and 1915 is to be credited with only 17 per cent of the country's production in those years when the total yield was only a third of that of 1925.

In the one instance of co-operative control by the Salt Creek Conservation Committee, the prorating of production in 1922 and 1923 reduced the output to perhaps one-third of the productive capacity of the 600 to 700 wells then producing. The effect of the committee's restrictions on production was a matter of only 8 or 9 per cent of the country's production of that period.

The question of the country-wide influence of such co-operative action on either supply or price would, moreover, under any legalized procedure, be always subject to "appropriate and adequate governmental scrutiny," quoting from counsel of the American Petroleum Institute, "to the end that these owners might not be stimulated to undue haste and a wasteful competition in the development of their properties and trade, but might have a greater liberty to consult the economic conditions of the industry from time to time."

The test of experience can be applied to the voluntary agreement plan of pool development and operation, for instance can be cited of one-company control of a pool, of co-ordinated development by a few owners, of community action, and of prorating agreement with later group control.

The report cites the Cabin Creek, W. Va.; Rainbow Bend, Kansas, and Reagan County, Texas, Fields as outstanding examples of the good results of economic drilling, the three fields being owned either by one or by two companies which co-operated in conservative drilling operations. Santa Fe Springs, Calif., was given as an example of wasteful drilling, the total losses in this field from this competitive struggle being given as $200,000,000, or more. Dominguez, Calif., and Salt Creek, Wyo., were cited as models of efficient and conservative drilling operations and production methods.

The practical worth of co-operation in planning development and in guiding operation is not only proved by experience, but the results of research now in progress point unmistakably to the urgent need of concerted action in development and operation of an oil pool. Recently the Texas Commission in accord with the opinion of the operators has considered the adoption of a general rule governing the use of air pressure in oil wells, action which illustrates the trend toward limitation of individual action so as to promote the common interest. The need of concerted action, whether by State regulation or by voluntary agreement, is now well-nigh universally accepted in any program of rejuvenation of a depleted oil pool, and the application of a similar principle to the conservation of gas-pressure in a new oil field as to its restoration in an old field would seem altogether logical and even more desirable.

Government's Own Problem

The Federal Government is still the owner of several hundred million acres of land, the title to which is held really in trust for the public generally. Within these areas are proven oil fields and also much unexploited territory holding, in varying degrees, promise of oil in commercial quantities.

All these areas, except some special reserves, may fairly be said to be wide open to private appropriation through lease or otherwise. There seems to be no discretionary power anywhere to resist the exploitation of these lands and the dissipation of the Government's oil resources. The leasing of the Indian lands is progressively mandatory until exhaustion.

Production From Indian Lands

From 1899 to 1924 inclusive (fiscal years), there was produced from the Indian lands in excess of 596,795,000 bbls. crude oil, and approximately 257,065,000 thousand cubic feet of natural gas.

During the fiscal year ending June 30, 1925, 48,485,697 bbls. of crude oil were produced and 89,957,000 thousand cubic feet of gas.

In reports to the Congressional Committee on Indian Affairs, under date of January 12, 1926, the Secretary of the Interior also said with respect to the mandatory provisions of the Osage oil leasing act of March 3, 1921:

"With respect to leasing the remaining undeveloped lands of the reservation for oil mining, the section of the act referred to is arbitrary; and the Osage lands must be offered for lease regardless of the condition of the market, or of any other economic conditions affecting the industry. It is believed that the law should be amended so as to allow the Secretary of the Interior some degree of discretion in the matter of developing the remaining oil resources of the Osage Reservation, to the end that the Osage tribe and the Secretary of the Interior may have equal opportunity with independent lessors of oil and gas lands to consider the conditions of the market, and other relevant industrial conditions, and to proceed in the matter of advertising additional lands for leasing as may seem best for the tribe. Amendment of the law to permit the exercise of such discretion seems necessary if the Osage tribe is to obtain the greatest benefit from the oil resources of their reservation."

While it is true that the present leasing system of the Federal Government provides for prompt and continuous development with competitive drilling, the administrative policy of late has fully recognized the advantage to landowner, oil operator and public alike in delaying production in periods of acute overproduction and as far as the statues permit discretion, extreme leniency has been the rule in granting application for relief from the full drilling requirements as set forth in the terms of the lease. The desire of far-seeing operators to shut in production until the oil from their wells was needed has been fully met with sympathetic action by the Federal officials. Few if any private landlords have been so liberal. The field engineers representing the Department of Interior have also practiced conservation in their enforcement of every possible measure to prevent physical waste and to increase recovery, and in this the co-operation of the lessees has become more and more evident. Federal supervision of this type commends itself to the industry.

Government Has Remedy

The story of the development of the Federal oil lands is not unlike that of privately owned lands, except that a remedy has been available, that of legislation by Congress. But legislation, even

(Continued on page 164.)

BRILLIANT FUTURE FOR PETROLEUM IN DIVERSIFIED INDUSTRIES

By L. M. Fanning

PHILADELPHIA, Pa., Sept. 8.—Brilliant achievements not even dreamed of are ahead, Prof. James F. Norris of the Massachusetts Institute of Technology, president of the American Chemical Society, said yesterday in an address on "The Future of the Chemistry of Petroleum" before the Society's Division of Industrial and Engineering Chemistry.

"The most brilliant part of the picture of the future of petroleum chemistry," according to Professor Norris, "is the assured development of petroleum as the raw material of a widely diversified organic chemical industry.

"It is not bold to predict that before long the production from petroleum of chemical substances for uses other than the lubrication and the production of heat and power, will exceed in amount the products of the coal tar industry. The synthetic production from petroleum of many of the aliphatic compounds so widely used, is a thing of the future.

"We shall see new or improved theories of the genesis of petroleum based on wide observation—theories that can be subjected to experimental examination. While this work is in progress new knowledge will be accumulating in university laboratories that may help to solve the problem.

"The study of the chemical action produced by the alpha particles emitted by radium when they come into contact with molecules may seem far afield from petroleum, but recent work shows that this type of energy changes methane into a mixture of compounds that resemble crude petroleum. This observation taken along with the fact that helium occurs in the natural gas from certain sources makes the study of radioactivity from this point of view of the first importance.

"It may turn out that one type of petroleum at least goes back to a vegetable origin that was converted into marsh gas and finally into higher hydrocarbons.

Petroleum of Future

"The formation of hydrocarbons from vegetable material through action of bacteria or other agencies will some day be studied, and the results may lead to important development. Heptane is produced by a certain type of tree and other hydrocarbons have been shown to have a vegetable origin. Some day we shall know more of such chemical processes.

"The world must eventually turn for help to the tropics with their limitless supply of energy in the form of sunlight. And petroleum or something to do the work now done by petroleum will be made from the vegetable material so abundantly and quickly supplied with energy from the sun.

"The study of the genesis of petroleum will lead to the discovery of facts that will help in devising systematic methods for the search for new deposits.

"It is a fundamental fact in industry that a detailed knowledge of the properties of the raw material used is essential for the best results. This knowledge has been lacking in the case of petroleum and the first task of the chemist is to acquire it.

"In the future the study will not be limited to the investigation of those properties that come into play in handling petroleum by the methods now in use, but attentions will be paid to the enriching of our knowledge of the fundamental chemistry of the hydrocarbons and their many types of derivatives related

(Continued on page 164.)

Crude Runs to Stills Highest in Year

Crude Throughput at Mid-Continent Refineries September 1 Shows Increase of 13,020 Bbls. Over August 1

By Neil Williams

More crude is being run to stills of Mid-Continent refineries than at any other time this year, or even since August 1, 1925, according to the monthly survey of The Oil and Gas Journal based on operations the first of the month. The total throughput of refineries in this area, including Oklahoma, Kansas, north central Texas, north Louisiana and Arkansas, on September 1, was 420,495 bbls. This not only was an increase over the report of August 1 but also set a new peak for runs this year.

The record throughput this year previous to September 1 was on June 1 when 415,450 bbls. were put through the stills of Mid-Continent refineries. This was 5,045 bbls. less than the runs the first day of this month. Runs on August 1, this year, were 407,475 bbls., representing an increase of 13,020 bbls. for September 1.

It has not been since August 1, 1925, that crude runs to stills were greater than now. On that date, the throughput totaled 427,382 bbls., or only 6,887 bbls. more than the present daily total. The peak of operations during 1925 was reached on July 1 when these same refineries handled 440,350 bbls. This was not only a record for that year but was the greatest amount of crude run in any single day in the history of the Mid-Continent.

Reflection of Market

The increase in runs over last month can be taken as a direct reflection of refined market trends. The exceptional demand for all products, except gasolines, during August has resulted in an acute scarcity of kerosenes, fuel oils, gas oil and distillates, and many refiners have been forced to increase their operations to cover their requirements.

In addition, gasolines took a turn for the better the last week in August and with the beginning of September, the outlook was bright for generally strong markets and a heavy demand for all products during the month. Since the first of the month, there has been a noticeable slackening in inquiries for material, largely because of the higher prices asked, and if this continues it remains to be seen what the effect will be on runs to stills the remainder of the month.

Several important refiners have made it known that runs to stills at their plants will be increased materially later in the month over the figures shown in accompanying tables but there are a great number of refiners, especially the smaller, who govern their operations according to the necessity of curtailing production.

Refined markets throughout the summer, except for brief periods, have been extremely unfavorable until just recently but the steady decline in production due to a gradual reduction in runs since June had begun to place Oklahoma refiners in a very much improved situation as regards stocks on hand. Considering this, the substantial increase in runs comes at a critical point with market trends hinging on the possibilities of consumption holding up or increasing sufficiently to take care of the greater production of petroleum products.

Relation to Crude

Ordinarily substantial increases or decreases in crude runs have important bearings on Mid-Continent crude markets. Boosts in runs naturally make that much crude less to be placed on the market; reductions in runs make that much more crude available. However, this month, the increase in runs has been more than offset by gains in crude petroleum, and in reality the amount of crude consumed by Mid-Continent refineries is less in proportion to the total production than at any other time this summer.

All summer Mid-Continent refineries have been running from 38 to 39 per cent of the crude production to this district which has been responsible to a large degree for the healthy oil situation. However, on September 1, despite the 14,520 bbls. increase in runs to stills, refiners were taking only 36.3 per cent of the production.

The increase this month was general, with each of the five refining districts in the Mid-Continent boosting their runs. The largest gains were shown in Oklahoma and north central Texas while in Arkansas there was but a slight change amounting to only 300 bbls. for the 10 plants there.

Considering Oklahoma alone, however, there was a generally steady tone because, with the exception of two or three plants, changes in runs were comparatively slight. It was an increase of 5,500 bbls. in runs at the Ponca City plant of the Marland Refining Co. which swelled Oklahoma's total throughput. This boost, however, only marked the return of the Marland operations to normal after having been reduced 3,500 bbls. August 1 as compared with previous months.

An increase of 1,500 bbls. in daily crude runs also was shown at the Muskogee plant of the Pure Oil Co. This was due only to that company's general expansion and building program. The capacity of that plant has been increased from 2,500 to 5,000 bbls.

North Texas Changes

In north Texas one of the most important changes in operations was at the Col-Tex Refining Co. at Colorado. This plant, operated by Anderson-Prichard Oil Corp. of Oklahoma City, has just enlarged its capacity from 5,000 to 7,500 bbls. and is running 6,500 bbls. daily compared with 4,500 bbls. a month ago. This makes the second increase in capacity of this plant in the last year.

The Primrose Refining Co. at Wichita Falls also resumed operations during the month after being shut down several months. The plant now is running 1,000 bbls. daily. The plant of the Western Oil Corp. at Wichita Falls, Tex., was not operating on September 1. In all, 8 plants out of the 30 reported operating in north central Texas increased their runs while decreases were shown by only 4.

It will be noted in the accompanying table that the Crystal Oil & Refining Co. of Shreveport is listed with only one plant. In past reports, the company has operated with two plants, one having a capacity of 5,000 bbls. and the other 3,500 bbls. The plants have been combined with a total capacity of 10,500 bbls. Runs at the plant have been reduced approximately 1,000 bbls. since the last report. Increases by the Louisiana Oil Refining Corp. and the Shreveport Producing & Refining Corp. have offset this drop in the total Louisiana plants.

In Arkansas, as previously mentioned, there was but little change in refinery operations. Three plants increased runs and five reduced but in the totals a gain of 300 bbls. daily was shown. The Kettle Creek Refining Co. boosted runs about 600 bbls. but this was offset by other plants.

The total gain in throughput at Kansas refineries amounted to only 300 bbls. daily. Although several plants including the Standard Oil Co. of Kansas at Neodesha and the Derby Oil Co. at Wichita made substantial reductions, and the Wilhoit Refining Co. at Joplin, Mo., was only operating its cracking stills, gains made by the White Eagle Oil & Refining Co. and the Roxana Petroleum Corp. placed Kansas with refining centers showing increases.

In all 110 plants were reported operating in the Mid-Continent on September 1, out of a total of 125 plants, which have operated at some time or other within a year. The crude capacity of all these plants now is 632,350 bbls. daily. Runs to stills lacked only 211,855 bbls. of the total capacity.

MID-CONTINENT REFINERY OPERATIONS
Table No. 1
(Based on plants September 1, 1926, and August 1, 1926)

	*No. Plants Sept. 1	Crude Capacity (Bbls.)	Crack. Capacity (Bbls.)	Plants Oper. Sept. 1	Crude Rns. Sept. 1 (Bbls.)	Plants Oper. Aug. 1	Crude Rns. Aug. 1 (Bbls.)	Daily Incr'se Sept. 1
Oklahoma	52	265,300	93,550	49	189,350	49	174,450	5,900
North Cen. Texas	38	167,550	49,450	30	89,525	30	84,025	5,500
†Kansas	21	127,000	56,600	17	92,020	18	91,700	320
N. Louisiana	5	44,000	7,500	4	37,000	5	36,000	1,000
Arkansas	9	30,500	12,600	10	21,600	10	21,300	300
Total	125	632,350	220,700	110	429,495	112	407,475	13,020

*Does not include plants which have been shut down one year or longer.
†Includes one Missouri plant.

Table No. 2
(Based on plants September 1, 1926, and September 1, 1925)

	*No. Plants Sept. 1,1925	Crude Capacity Sept. 1,1925 (Barrels)	Plants Operating Sept. 1,1925	Crude Runs Sept. 1,1925 (Barrels)	Daily Increase Sept. 1,1926
Oklahoma	61	278,000	53	185,525	**5,175
North Central Texas	49	171,950	40	92,335	**2,110
†Kansas	26	125,900	21	87,600	4,420
North Louisiana	7	39,300	5	26,400	10,600
Arkansas	14	35,700	8	15,830	5,770
Total	157	650,850	127	407,690	12,805

*Does not include plants which have been shut down one year or longer.
†Includes two Missouri plants.
**Decrease.

REFINERY OPERATIONS IN OKLAHOMA
(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs September 1	Runs August 1
Anderson-Pritchard, Cyril	1,500	1,500	1,500
Barnsdall Refineries, Inc., Barnsdall	5,000	5,000	4,000
Barnsdall Refineries, Inc., Okmulgee	6,000	3,000	4,000
Bell Oil & Gas Co., Grandfield	3,000	1,500	1,500
Bolene Refining Co., Enid	5,000	3,600	4,200
Cameron Refining Co., Ardmore	3,900	3,000	3,000
Canfield Refining Co., Yale	500	100	100
Champlin Refining Co., Enid	16,000	12,000	12,000
Continental Oil Co., Sapulpa	7,000	2,400	2,400
Cushing Refining & Gasoline Co., Blackwell	1,500	1,200	1,200
Cushing Refining & Gasoline Co., Cushing	2,500	1,100	700
Empire Refineries, Inc., Cushing	7,000	5,000	5,000
Empire Refineries, Inc., Okmulgee	3,000	3,000	3,000
Empire Refineries, Inc., Ponca City	6,500	6,000	6,000
Garber Refining Co. (Omar)	3,000	2,500	2,500
Gilmer Oil Co., Ringling	1,500	1,500	1,100
Globe Oil & Refining Co., Blackwell	5,000	4,500	4,500
Hewitt Refining Co., Hewitt	1,500	Shut down	Shut down
Illinois Oil Co., Cushing	3,000	1,000	1,000
Imperial Refining Co., Ardmore	6,000	3,300	3,500
Independent Oil & Gas Co. (Allied), Okmulgee	4,000	3,000	3,000
Intercean Refining Co. (Lorraine), Bristow	4,000	1,000	1,000
Lawton Refining Co., Lawton	1,000	Shut down	Shut down
Johnson Oil Refining Co., Cleveland	5,000	4,500	4,500
Marland Refining Co., Ponca City	25,000	22,000	16,500
Mecca Refining Co., Allen	1,500	100	100
Mid-Continent Petroleum Co. (Cosden), West Tulsa	35,000	22,500	22,500
*Miller Brothers 101 Ranch, Marland	100	50	50
†Oil State Refining Co., Enid	2,000	300	1,000
Oklahoma Asphalt Co. (Nyanza), Wilson	3,000	250	800
Peppers Gasoline Co., Covington	1,000	800	800
Pierce Oil Corp., Sand Springs	10,000	7,500	7,000
Pontotoc Pipe Line & Refining Co., Allen	800	300	350
Producers Oil Co., Bristow	1,500	800	800
Producers & Refiners Corp., West Tulsa	7,000	4,500	4,500
Pure Oil Co., Ardmore	6,500	2,000	2,000
Pure Oil Co., Cushing	5,000	Shut down	Shut down
Pure Oil Co., Muskogee (O. P. & R. Co.)	5,000	4,500	3,000
Riley Petroleum Co., Bristow	800	500	500
Rock Island Refining & Pipe Line Co., Duncan	2,500	1,700	2,000
Sayre Oil & Refining Co., Sayre	500	100	100
Shaffer Oil & Refining Co., Cushing	10,000	9,200	9,200
Sun Oil Co., Yale	3,000	2,500	2,800
Sinclair Refining Co., Muskogee	1,000	850	1,000
The Texas Company, West Tulsa	11,000	11,000	11,000
Texas Pacific Coal & Oil Co., Wynnewood	2,500	2,000	1,800
Tidal Refining Co., Drumright	10,000	9,000	9,000
Transcontinental Oil Co., Boynton	2,500	1,500	1,400
Transcontinental Oil Co., Bristow	6,000	4,000	4,000
Tonkawa Petroleum Co., Tonkawa	2,500	1,000	1,000
Western Oil Corp., Beckett	1,500	1,100	1,000
Yale Oil Corp., Yale	1,200	600	750
Total	263,300	180,350	174,450

*Average daily runs lower. †Operated by Bolene Refining Co.

REFINING OPERATIONS IN KANSAS
(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs September 1	Runs August 1
Arkansas City Refining Co., Arkansas City	8,000	2,500	2,100
Barnsdall Refs., Inc. (White Phillips), Wichita	5,000	4,000	4,000
Derby Oil & Refining Co., Wichita	5,000	2,000	3,500
El Dorado Refining Co., El Dorado	3,500	2,600	2,500
Golden Rule Refining Co., Wichita	1,000	1,000	1,000
Grant Oil Co., Augusta	1,500	Shut down	Shut down
Kanotex Refining Co., Arkansas City	9,000	6,300	6,500
Manhattan Oil Co. (K. C. Ref. Co.), Kansas City	6,000	5,300	5,000
Miller Petroleum Co., Humboldt	2,000	1,300	1,500
National Refining Co., Coffeyville	6,000	6,000	6,000
Peerless Oil Refining Co., Chanute	3,000	2,100	2,200
Roxana Petroleum Corp., Arkansas City	19,500	17,370	15,000
Russell County Pipe Line Co. (West Kans. Ref. Co.), Russell	2,500	Shut down	Shut down
Sinclair Refining Co., Coffeyville	6,500	6,000	6,500
Sinclair Refining Co., Argentine	8,000	7,000	7,000
Skelly Oil Co., El Dorado	14,000	12,000	11,500
Standard Oil Co. of Kansas, Neodesha	12,000	7,500	8,500
United Oil & Refining Co., Hutchinson	2,500	Shut down	Shut down
Vickers Petroleum Co., Potwin	3,500	2,550	2,500
White Eagle Oil & Refining Co., Augusta	6,500	6,500	5,500
West Missouri Group—			
Wilhoit Refining Co., Joplin	2,000	Rerun	1,000
Total	127,000	92,020	91,700

(Continued on Page 146)

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MOTOR FUEL SUBSTITUTES

The question is frequently being asked, even among oil men, as to how close we are to the discovery and use of motor fuel substitutes for gasoline.

The answer is that while synthetic motor fuels have been developed in laboratories and tested on exhibition runs there is no present indication of their manufacture on a commercial scale or at a price that would compete with gasoline.

Furthermore the oil industry itself is getting farther away from the price conditions that would permit competition by substitute fuels, actually making cheaper gasoline from higher priced crude and more of it.

Since the chief hope for the development of substitutes for gasoline has been that gasoline would increase in price until the more costly processes of making the substitute fuel could compete with it, the fact that the oil refiners and natural gasoline manufacturers are constantly improving their efficiency, reducing costs and increasing recovery, makes the day when the synthetic products can compete commercially even more remote.

There was a time when we heard a lot about the possibilities of alcohol. The French taxed their ingenuity to prove its practicability only to confess, after years of experiment, that it is necessary to find some product that will be even cheaper than alcohol.

Quite a flurry was caused a year or two ago by imports of German methanol or methy alcohol and rash predictions were made as to the effects of its competition with American products. Suffice it to observe that none of those effects happened.

Like most reports about substitutes that were to drive gasoline out of the market, the facts were absurdly exaggerated out of any resemblance to the truth. In this case, again, the principal question was found to be the cost of such synthetic fuels.

In England talk of substitutes for gasoline has centered largely on the carbonization of coal. It is easy to figure mathematically that fuel oil can be obtained from coal but it must be remembered that the retorting of the entire tonnage of bituminous and lignite coal mined in the United States in 1924 would have produced barely 3 per cent of the total consumption of motor fuel.

Of the 500,000,000 gallons of "motor spirit" consumed in England annually the quantity of benzole produced is about 3 per cent and it would not be more than 12 to 14 per cent if all the benzole were recovered from the gas produced in gas works and coking plants in that country.

More recently the Bergius process for the hydrogenation of coal, which was claimed to give an oil yield up to 60 per cent of the coal, has been the subject of heated controversy between the sponsors of the process and authorities who dispute their claims.

One critic charged that the products were of low commercial value yet required exceedingly costly apparatus to produce them, that the apparatus is not durable and the process expensive to work. Bergius replied that it was commercially possible to produce an artificial oil at 40 per cent below the current prices.

Its actual production and commercial disposal are the only proof of that claim and it has so far been lacking.

The chief engineer of the French Government's National Society for Research in the Treatment of Combustibles, which has been diligently seeking a gasoline substitute, reported that the process was too costly, and results claimed greatly exaggerated, and the cost price entirely out of reach for commercial production.

M. Daniel Berthelot, a French chemical expert, said many solutions for a synthetic fuel had been found, both by French investigators and others, but the crucial test of prime cost had prevented any real progress.

In a recent review of all the various processes being experimented with abroad A. C. Fieldner, chief chemist of the Bureau of Mines and superintendent of the experiment station at Pittsburgh, Pa., concluded that on the whole there is little encouragement in low temperature carbonization for those who have built great hopes on the liquid fuel to be derived from this method of carbonizing coal.

Turning to shale oil, Capt. E. de Hautpick, writing in the Mining Journal of London, says "besides the hopeless Scottish shale industry there is no one commercial working plant all over the world." It was remarked also that "coal retorted under temperature yields a quantity of crude oil not appreciably less than the average oil shale while the carbonized solid material may have a salable value two or three times that of the crude oil yield. And about 50 per cent of the cost of handling shale is mining, which tends to increase."

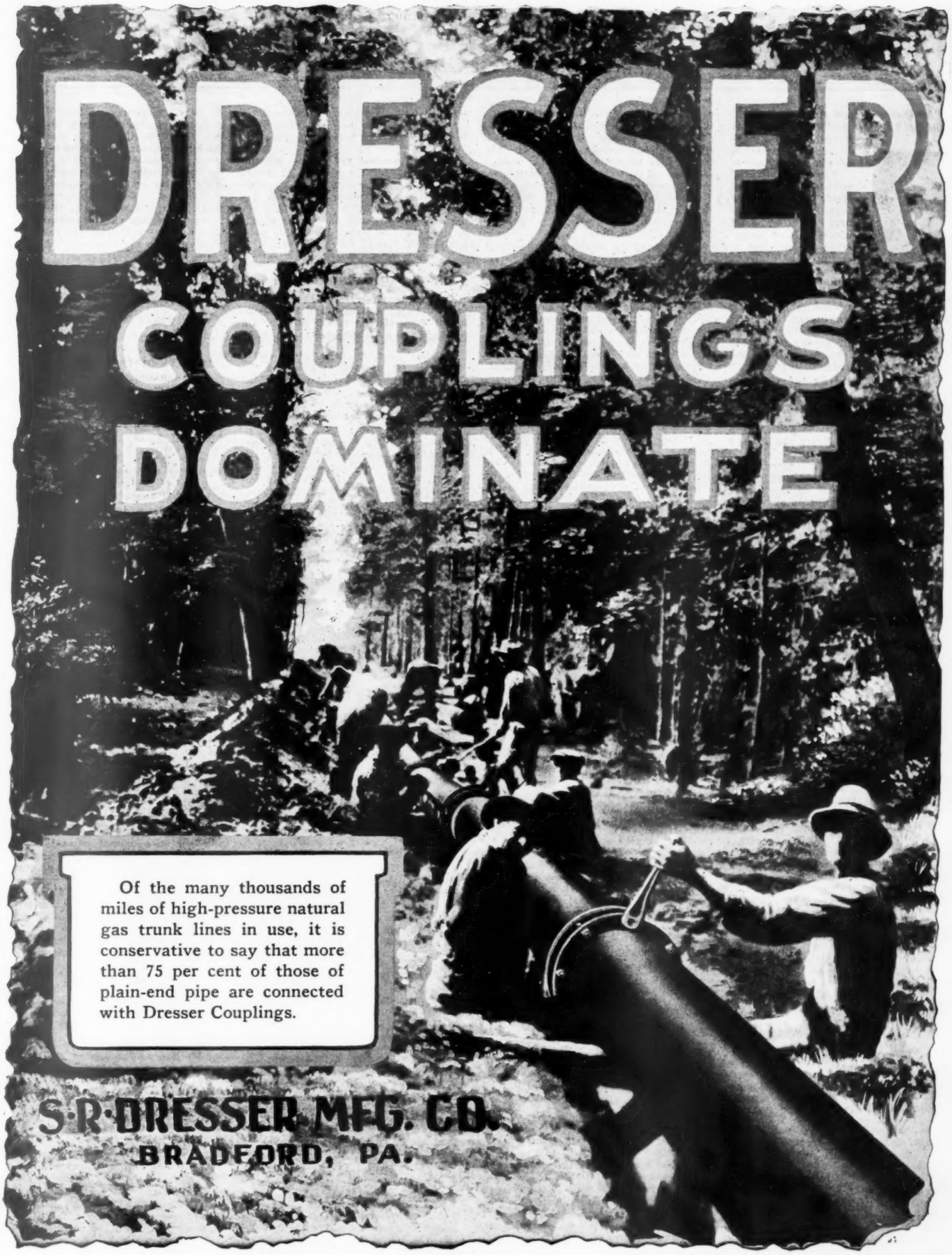
This summary of the most recent developments and present situation in regard to gasoline substitutes in Europe which has been most keenly interested in the search for a synthetic motor fuel that would compensate for the lack of oil in that continent does not offer any occasion for alarm about the probability of the gasoline and oil industries being soon compelled to meet competition from commercial substitutes.

Vastly more practical commercial progress has been made in the refining of crude oil than in all the efforts to find a substitute fuel.

The oil industry has been able not only to produce more motor fuel from the same quantity of crude but as a result of those processes has been able to obtain better prices for its other products, both factors operating to permit the production of motor fuel at lower cost from higher priced raw material.

The promoters of synthetic fuels have not alone to develop their laboratory tests into commercial quantities but to meet the fact that when it comes to cost competition with gasoline will require them to produce at prices which have been wholly out of their reach.

There is also to be taken into consideration the marvelous strides being taken by the refining industry, quickly translated into commercial output, and the recognized probability that the evolution of refining may have but begun. Instead of substitutes for petroleum, oil itself is entering into the production of substitutes for other products, as witness its part in the manufacture of synthetic alcohols and rubber asphalt.


DRESSER
COUPLINGS
DOMINATE
Of the many thousands of miles of high-pressure natural gas trunk lines in use, it is conservative to say that more than 75 per cent of those of plain-end pipe are connected with Dresser Couplings.
S·R·DRESSER MFG. CO.
BRADFORD, PA.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

The Question and Answer Department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry. Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

STEAM AND WATER LEAKAGE

What is the extent of the loss through the practice of bleeding steam and water lines through say a quarter-inch opening?—T. G.

It is necessary to know more about the conditions than may be obtained from the question. A general answer may be of some value.

A quite complete table showing losses of this kind as applied to air, water, and steam was published some years ago by the Rock Island Railroad and more recently by Johns-Manville. This table furnishes the details as demonstrated by openings increasing in size from 1/32-inch to ½-inch.

The loss of steam per month at 100 pounds pressure for the 1/32-inch opening was equivalent to 3,175 pounds. With an opening of 1/16-inch the loss was approximately four times as great. The ⅛-inch opening produced a loss of 203,000 pounds for the month. This loss is shown as converted to a money loss of $121.80, with the cost of steam at 60 cents per 1,000 pounds.

The loss for water leakage is illustrated in a similar way. When the water was under a pressure of 40 pounds, the volume of the monthly loss was 307,700 gallons through the ¼-inch opening. At 15½ cents per 1,000 gallons this amounted to $48.

If you will apply your local conditions in a similar manner as to that suggested in the above you will be prepared to make an estimate of your loss.

BACTERIAL ACTION FORMATION OF PETROLEUM

I have seen a statement indicating that bacterial action may have been responsible for the formation of petroleum and shall appreciate additional information on this if you have it.—B. M.

A thesis on the theories of the formation of petroleum was presented before the Institution of Petroleum Technologists last May by Ernest Clark. His statement of the action of bacteria may give you the information you wish.

The changes which occur in the organic matter are undoubtedly putrefactive, in most cases aërobic at first, in others anaerobic from the commencement. Bacteria living under anaerobic conditions may derive their oxygen from the organic substances of which it is a constituent, forming hydrocarbons and organic sulphur, nitrogen and phosphorous compounds—chiefly hydrides. The chemical effect of bacteria seems to be due to the catalytic action of the enzymes which are produced; and anaerobic bacteria can cause oxidation or reduction according to the presence of hydrogen or oxygen acceptors. The bacterial changes are accomplished rapidly, compared with the exceedingly slow geological distillation or devolatilization due presumably to weight and thrust pressure and assisted by depth temperature. The chief problem is to determine the stage to which bacterial action carries the organic matter in its transformation and to what extent geochemical action is operative. The researches on coal formation have demonstrated that cellulosic plant materials yield a slow continuous evolution of gases rich in hydrogen—chiefly methane, which results in the formation of carbonaceous solid residues yielding a high proportion of aromatics on destructive distillation. In the formation of petroleum different types of substances are involved, and it is not known whether these would yield heavy hydrocarbons at a first stage by elimination of carbon dioxide and water, or if methane would represent an intermediate product and the heavy hydrocarbons the result of its polymerization. In the latter case a bituminous residue would be expected. That the geochemical process is not a simple pressure-heat distillation is indicated by the lack of common vertical graduation of oils in the field, even allowing for the influence of other factors in determining the grade of oil. The type of oil seems to be essentially a stratigraphical character rather than a vertical one, although the non-occurrence of asphalt base oils below those of a paraffin base in any single pool may have a genetic significance. It is probable that geochemical action is frequently operative because of the arrestment of biochemical change by the production of antiseptic substances, resulting in a correspondingly different product. It is, however, known that some types of bacteria can exist in hydrocarbons and decompose them.

CHARCOAL AND COMPRESSION METHODS FOR TESTING GAS

What is the difference between the charcoal test and the compression test used in testing for the gasoline content of casinghead gas? How do these tests compare with high and low gasoline gas and what is the general practice in the use of these two tests?—J. B. S.

When a gas is to be examined for the quantity of gasoline which may be present, the selection between the charcoal and compression method for this purpose is often a matter of choice and convenience. The charcoal apparatus, with extra absorption tubes should not weigh over 50 pounds so it may be carried about without difficulty. The gasoline is adsorbed in the charcoal which must be heated in a distilling flask, the vapors condensed and measured in order to complete the test. When making the test with the compression outfit the examination is completed at the location and if for any reason the results are not satisfactory, the work may be repeated until checks are obtained.

Better results are obtained by the charcoal method when testing lean gas, say one-half gallon and under, than when the compression method is used. On the other hand, the compression method seems to give more reliable data on wet gases than the charcoal method.

On the basis of plant recoveries it appears that they are higher than the charcoal determination indicates when handling lean gas and lower with the rich gas.

It is the general practice to use the charcoal test for the purpose of determining plant efficiencies. It is possible soon after a new plant is put into operation, to construct a curve of the actual recoveries against the results shown by the charcoal tests. From this very reliable conclusions may be drawn.

LONG RESIDUUM AND COMPOUNDED OILS

What is the difference between a still-reduced long residuum and kettle-compound Pennsylvania oil, if any, in appearance and laboratory tests?—V. A. B.

If a low cold test bright stock and a low cold test neutral, each having the desired characteristics, are compounded in the proper proportions, a kettle-compounded oil may be made which will meet the specifications of a still-reduced long residuum.

From the above it might be said that the oils in appearance, performance and laboratory tests are the same, but frequently this is not true. The cold test of the compounded oil is usually considerably higher than the dewaxed still-reduced residuum for the reason that all long residuums are the product of centrifuging and the resulting oil normally has a cold test which is very nearly as low as the cold test of the oil. The general appearance, including brightness and color, will to a large extent depend upon filtration. Most long-residuum oils have a better color and are clearer than the compounded oils because a better result may be obtained from filtering a long residuum as such than under the conditions where the neutral and the bright stock are filtered separately and then blended.

The relation of flash, fire and viscosity of the two oils should be identical if the blending has been completed and components of the mixture have been correctly chosen. It is claimed, however, by the producers of long residuums that because the product is a straightrun product, it is more homogeneous in its consistency than in the case of a compounded oil. We know of no tests, however, which confirm or disprove this claim.

HYDROGEN SULPHIDE REMOVAL FROM GAS

Our gas contains a large quantity of hydrogen sulphide which is removed from the gasoline. This gasoline passes through three washers, caustic soda, sodium hypochlorite and water. Can you suggest any improvement in this treatment?—L. G. T.

Hydrogen sulphide is very soluble in water as evidenced by the fact that 59 degrees Fahrenheit water dissolves 3.23 times its volume of the gas. Most crude oil is in contact with water and the solubility of hydrogen sulphide in water probably explains the fact that most crudes are free from hydrogen sulphide.

If you were to reverse the position of the water wash tank, or better, put in several water wash tanks as the first part of the process you would improve the method of treatment.

COLD TEST LOWERS WITH INCREASED VISCOSITY

Why does the cold test become lower as the viscosity increases in still-reduced long-residuum motor oil?—V. A. B.

All long-residuum motor oils are dewaxed by means of the centrifugal process. The oils so dewaxed have never been subjected to excessive heat and their wax content is consequently entirely amorphous. It is more difficult to separate the wax from the lighter fractions of the long residuum than it is to separate the wax from the heavier fractions of the long residuum. Consequently when operating the centrifugal process without variation as to naphtha blend or the degree of refrigeration used in chilling, the longer or less viscous residuums will have a higher cold test than the shorter or more viscous residuums.

It should be remembered that the longer or less viscous residuums may be produced so as to obtain a low cold test, by slightly varying or increasing the naphtha blend and increasing the degree of refrigeration applied to the chilling of the oil.

ACIDITY OF LUBRICATING OILS

Will unfinished neutral oils gain additional organic acidity when in storage as much as six months or a year? Is acidity of 0.000168 mg. equivalent of caustic potash or per gram of neutral oil considered high?—D. L. W.

Some oils have been known to increase in acidity after prolonged storage. The presence of acid in an oil seems to depend upon the character of the crude from which the stock was obtained and upon the treating process. In the presence of air and water there may be oxidation resulting in the formation of organic acids. Certain crudes are known to contain organic acids and the complete removal of them by the common treating process is difficult, requiring long contact with excessive quantities of acid. Again, if an acid-treated oil is not perfectly washed, there may be formed normal salts which in the course of time decompose or are altered with the liberation of acid or the formation of an acid salt.

Lubricants of the Class A grade should not show an acid reaction and there is no reaction specification for oils of the Class B grade. The acidity of the other oils may vary from an acidity equivalent to 0.10 mg. of potassium hydrate to 0.30 mg. The quantity of acid which may be present in an oil, therefore, depends upon the use to which it is to be put.

REVERSED HEAT ENGINE

Can you please tell me whether any attempt on a commercial scale has been made to utilize the heat pump or reversed heat engine to raise heat through a small temperature range and to supply heat in this way as distinct from refrigeration? At any rate, theoretically, a small quantity of high-grade heat can in the above manner raise a much larger quantity through a small range. It would appear, therefore, that a process such as fractional distillation and condensation would present a suitable field, as in this case the range through which the heat is to be raised is very small, and the temperature would allow of a handy working fluid such as steam in the heat pump.—J. T. H.

We have no information that the utilization of heat in this manner has ever been accomplished on a commercial scale. It is interesting from a theoretical point of view and appears to be fundamentally sound. The transfer and conservation of heat is of major importance as is indicated by the constantly increasing number of heat circulating systems together with demand for more and better insulation.

Should any of our readers have information covering the details of a commercial use of this idea, we shall appreciate having the details or directions to the source from which the description may be obtained.

Increasing Efficiency

of

modern refining methods where cracking processes are used

WHEN oil refining was in its embryonic stage of development, gasoline, "a peculiar volatile substance," was dumped into the ocean—thrown away, because it had no economic value at that time.

The Forty-Niners, in their frenzied quest for quick riches, disregarded rich pay-dirt and derived only a fraction of the gold from the sand.

More than 25% of the pig was thrown away in slaughter houses years ago, but now the only loss in modern packing houses is the "pig's squeal."

In every industry, it seems, where rapid development takes place, great wastes occur which are sooner or later overcome by the perfection of methods permitting of economic reclamation of such wastes, to the end that conversion into profit may obtain.

The Oil Refining Industry today is upon the threshold of greater economic development, that will result in more substantial profits to the modern refinery.

The culm pile is part of the price of stove-size anthracite; sawdust and shavings are a part of the toll paid for planks; oil-coke residue represents a substantial fraction of the price paid for gasoline produced by the modern cracking process. With the almost universal adoption of modern cracking methods which permit of greater reclamation of gasoline from each barrel of oil than heretofore, it follows that the oil-coke residue presents a problem that must be given serious consideration by every refining engineer.

What is to be done with this growing tonnage of oil-coke residue? In its raw state coming from the stills, it has little commercial value, is difficult and costly to handle, has a limited market—yet, on the other hand, its fuel value is greater than that of anthracite.

Anticipating the universal adoption of cracking processes and sensing the need for some method to convert this waste of oil-coke residue into a profitable by-product and thus increase the efficiency of refineries, Fernholtz Engineers years ago began the study of briquetting as applied to oil-coke.

We have prepared an informative treatise on Briquetting that should be in the hands of every engineer. Ask for a copy.

Porter & Company

Briquetting Engineers

Board of Trade Bldg., Los Angeles, Calif.

Fernholtz

Briquetting Process

for converting waste into profit in modern refineries

Doherty Makes Sharp Reply to Hughes

Reiterates His Belief that Congress and the Federal Government Have Power to Regulate Conduct of Oil Industry

By C. E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Sept. 2.—President Coolidge's oil board received a statement from Henry L. Doherty, New York oil and gas magnate, in which he took sharp issue with contentions of Charles E. Hughes, formerly secretary of state, now counsel for members of the American Petroleum Institute. Mr. Hughes held that the nation's oil industry will best be served by self-regulation and avoidance of government interference. The Doherty statement, made public by Secretary Work, the board's chairman, was offered in rebuttal to views of Mr. Hughes, given at a public meeting of the board in May.

Counselling the board against either delay or "an attempt to prematurely issue a report," Mr. Doherty advocated a conference of "from 10 to 20 of the leading petroleum technologists of the country in connection with the government experts to fully discuss and agree if possible upon the advantages which will be gained and the savings which will be made by changes in our present methods."

Suggests a Round Table

He also suggested a round-table gathering to "get down to brass tacks as to just what is true" in an oil report of the committee of eleven of the institute and in the Hughes statement.

"There is a great deal contained in Judge Hughes' brief in opposition or in denial of things which I have never urged, so far as I know," Mr. Doherty said. "I do not know whether Judge Hughes, in telling you that the Federal Government has no power to legislate regarding the production of oil, is speaking from his own study of the matter or is simply adopting the views of the oil lawyers. He brings up no new argument that they have not brought up.

"Judge Hughes' contention that the Federal Government cannot control production within the states is a very sweeping statement which is not borne out by facts. . . . It is my unqualified belief that Congress has power under the constitutional provisions to provide for the common defense, to legislate regard ing the production of oil without stretching the powers granted to it one iota."

Report Is "Hopelessly Inexact"

Charging that Mr. Hughes lacked understanding of many important features and was unfair in his position, Mr. Doherty said Mr. Hughes "did not invite or request me to confer with him on this matter," and that the Hughes statement was apparently nothing more than his own rearrangement of the matters handed him by the oil lawyers. The report of the committee of eleven, Mr. Doherty termed "hopelessly inexact" and pointed out that Mr. Hughes frequently quoted it.

Mr. Doherty's Viewpoint

Mr. Doherty, in his statement to the Oil Board, dwells at length on the question of the power of the Federal Government to regulate the conduct of the oil industry and on authority of Congress to pass legislation affecting the industry, which would have effect in the whole United States, and his point of view is contained in the following paragraphs from his statement:

In considering new legislation regarding oil and gas, it must be remembered that our present laws are not in harmony with any of our usual property laws, other perhaps than those relating to wild birds and wild animals, and that these laws came about from our lack of knowledge regarding oil and gas and are now known to be in violent conflict with natural laws, based upon our present knowledge of oil and gas. Or stated in another way, our present laws are such that the best brains of the whole world could not make it possible to carry on the production of oil and gas under these laws without being in conflict with natural laws and thereby causing huge wastes and other evils.

The reason why I think the Federal Government has power to legislate regarding the production of oil is:

First—Because oil is our most important munition of war.

Second—It is in imminent danger of being exhausted to the point whereby we would be seriously handicapped in event of war.

Third—By changing our laws so they would conform to the general laws relating to other property, huge ground supplies of oil would naturally be built up which would be a great protection to us in event of war.

Fourth—The laws that now govern the production of oil are faulty and in violation of natural laws and make it impossible to avoid waste. By changing our present laws so they would be more in conformity with the laws governing other property, it would be possible to recover much larger quantities of oil and to conserve huge quantities of natural gas which are now wasted.

Fifth—This is the only country in the world that possesses enormous quantities of helium gas and it is believed by many that this gas will prove to be of vast and increasing importance as a war resource. This helium gas occurs always in association with natural gas, and only by changing our laws relating to the production of gas and oil can this helium gas in every instance be conserved.

Sixth—While in my opinion it is undesirable to do more towards the conservation of oil at this time other than to change our laws so that waste may be avoided, nevertheless, a future supply of oil from our own country is such a necessary war measure that the Federal Government should be in the most intimate touch with all matters relating to oil production and to be prepared on short notice to pass other laws aimed to still further conserve our petroleum should the necessity arise.

Government's War Power

As I read the constitution of the United States, all war power was given to the Federal Government and all war power was taken away from the States. The Federal Government then contracted to protect the States against invasion. If oil is, as I believe it to be, the most important munition of war, then I believe that the Federal Government would be well within its authority if it were to legislate regarding the production of oil and change the methods so that it would be possible for the owners to create, if they wished to do so, ground reserves of oil, and provided, of course, that the owners of this property were not divested in whole or in part from their property, and this I hold can be done.

I hold further that if the Federal Government was to legislate along the lines that I recommend, it not only would naturally create huge ground reserves of oil that would be available and could be drawn upon in event of war, but would also make it possible to conserve all of the natural gas, and recover a much larger quantity of oil, thus bringing a benefit to all of the property owners who had an interest in this oil and gas.

Says Oil Is Wasted

It can not be contended successfully by anyone that oil is not being wasted at a shocking rate, nor can it be contended that oil is not a most important munition of war. It is contended that we have a superabundance of oil. I see no convincing proof of this or, in fact, any proof whatever. All the evidence points to the probability of an early shortage. Quoting from the President's letter, he says:

"It is even probable that the supremacy of nations may be determined by the possession of available petroleum and its products."

This statement by the President is not in the least overdrawn, and yet Judge Hughes says we can do nothing to insure our war supremacy, or, in other words, we can do nothing to prevent the probability of defeat, even though we can see the reason for it and could eliminate the reason that threatens this defeat, but we have no power under our Constitution to do so.

If Government Has No Power

I hold that any non-offending state has the right to demand of the Federal Government that it should step in and prevent the waste of this important munition of war. I am told by Judge Hughes and others, when I attempt to assert that there is any power whatever in the Federal Government, that I am wholly wrong, that my position is absurd and that I do not even understand the theory of our form of government. I hold in turn that if they are right and I am wrong, I have disclosed something of vast importance to the American people, and something that interests more than merely our relatively small percentage of citizens who follow the profession of being lawyers.

If I deserve to be held up as an object of ridicule because I give a wrong interpretation of our Constitution, I do not think it can be denied that if my interpretation is wrong, then I have disclosed a situation which is of funda-

(Continued on Page 162)

DEEP WELLS IN SOUTHERN CALIFORNIA DUE TO EXCEPTIONAL CONDITIONS

By J. E. Eaton
Petroleum Geologist

The deep wells in southern California have for several years been a subject of world-wide interest. Records for rotary drilled holes, for speed, and for depth of production, have been made and broken in quick succession.

It has been but a few months since E. J. Miley's No. 6 Athens established a world record for deep production by yielding oil at 7,591 feet, and now, at this writing, No. 96 Olinda of the Chanslor-Canfield Midway Oil Co. has broken all records for total depth drilled, and is still making hole at 7,975 feet.

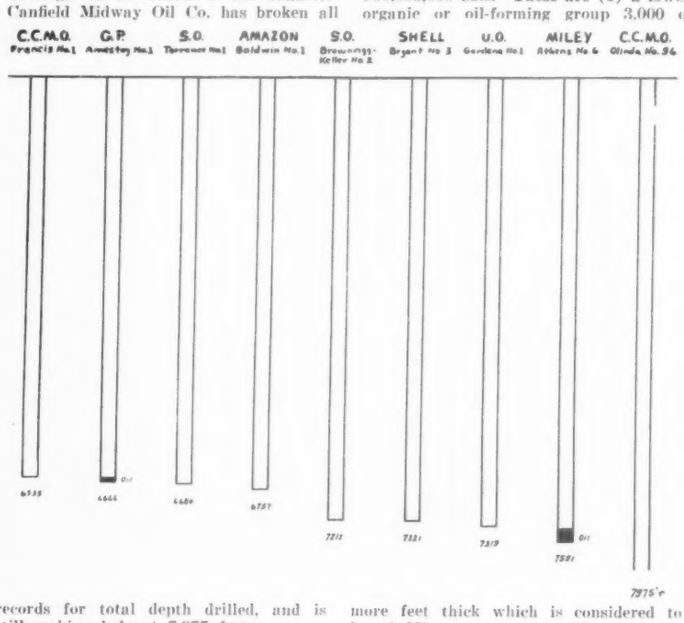
Geologic Conditions

The reason for these very deep wells is furnished by exceptional geologic conditions which are present in parts of California. Almost as far back as the earth history can here be traced, evidence is found of earth movements which were of unusual intensity.

Los Angeles Basin, for instance, has changed from land to sea and back again many times, and has frequently sunk so rapidly that thousands of feet of rocks have been formed in a period of time represented by but a few hundred feet of sediments in other parts of the world.

Los Angeles Basin proper contains two particular rock groups which have together made possible the enormous quantity of oil produced, so far about 950,000,000 bbls. These are (1) a lower, organic or oil-forming group 3,000 or more feet thick which is considered to be of Miocene age, and (2) an upper, more detrital, and reservoir group 7,000 or more feet in thickness which is considered to be of Pliocene and Pleistocene age.

Most of the oils so far produced in this basin apparently originated in the lower or oil-forming rocks, and then traveled upward by means of faults, crushed



(Continued on Page 162)

Good Wells Completed in Proven Areas

Spindletop to New Record While Panhandle Declines by Restriction. Upton County Offset Makes 2,000 Bbls.

The Independent Oil & Gas Co.'s No. 2 Emma Wooley in Upton County was the feature of the week in north Texas. It is 600 feet west of the Dixie company's No. 2 Hughes and came in flowing 4,000 bbls. through a 1-inch choke, increasing to 245 bbls. for one hour when it was reduced to a ½-inch bean, making 3,200 bbls., 40 per cent water. The water, however, settles out, leaving 2,000 bbls. of pipeline oil.

Good completions were reported in the Turbeville Pool, Archer County, in the Stunn Dover and Cross Cut areas of Brown County and in the Cook ranch district of Shackelford County.

Forty-eight completions were reported in the Texas Panhandle, but the field showed a decrease of 589 bbls., not of course a natural decline. Wheeler and Gray Counties are expected to show gains this week.

In the Seminole district of Oklahoma preparations are being made to drill Hunton lime wells to the new Wilcox sand. The Gypsy company's well is holding up to 3,800 bbls. and the Independent-Garland well in excess of 5,400 bbls.

Four wells added 20,200 bbls. initial output to the deep zone production at Spindletop, which is credited with 103,155 bbls. a day.

Ohio Oil Co. found a 100-bbl. well a mile ahead of production in the Sunburst Field and Homestake Exploration Co. a 2,000-bbl. producer.

A well standing 3,000 feet in oil with a trace of salt water in the heart of the Haynesville, La., Field, gives hope of Trinity sand production there.

In California operators and citizens have reached an agreement on lifting drilling restrictions in Alamitos Heights, adjoining the Marland company's Seal Beach area. There is hope of a deep sand in the southwest extension of Huntington Beach. Long Beach, it is now believed, passed its peak several weeks ago. Several deep wells are approaching completion at Ventura.

In the Lockport, La., district Vacuum-Gulf companies completed an 8,000-bbl. well 300 feet west of production, the largest yet found there.

The Skelly Oil Co. well, 5 miles west of the Maljamar well in New Mexico has a 40 bbl. showing and is expected to be as good as the Maljamar.

Duval County in southwest Texas reports a 50,000,000 gas well spraying oil that was shut in lest it run wild. Another test is now being drilled in what is thought may be a new pool.

OKLAHOMA

In the Seminole Field, the Gypsy Oil Co.'s No. 1 Carter, SE cor. NE NW, Section 24 9-6, made 3,085 bbls. for the 24 hours ending at 7 a.m. Tuesday morning of this week, and the Independent Oil & Gas Co. and R. F. Garland's No. 1 Fixico, SW cor. NE, Section 26-9-6, made 5,377 bbls. for the same period.

The Barnsdall Oil Co.'s No. 3 Carter, in Section 24-9-6, was producing from the Hunton lime and it was decided to drill it to the Wilcox sand. The well started flowing 1,700 bbls. at a total depth of 3,934 feet. It was deepened 7 feet. It will not be touched as long as the present rate of flow continues.

The Amerada Petroleum Corp. and Gardner Petroleum Co.'s No. 1, SE cor. SW NE, Section 23-9-6, is the most watched well in the pool, and should reach the Wilcox sand within a few days. It topped the Viola limestone at 4,062 feet, and geologists calculate that the Wilcox in this well should be reached at a depth of 4,130 feet.

North of Garber in Garfield County, the Roxana Petroleum Corp.'s No. 1 Reed, SW cor. NE, Section 34-24-3w, topped the Wilcox sand at 4,855 feet and has 3,200 feet of oil standing in the hole. The well is making no gas, and will be drilled in as soon as tankage is erected.

KANSAS

In Kingman County, Port D. Fleeger's No. 1, in Section 34-27-7w, had a showing in the chat touched at 3,924 feet. It made 250,000 feet of gas and 20 bbls. of oil, and a hole full of water was found at 3,939 feet. The well is drilling at 3,975 feet.

GULF COAST

BEAUMONT, Tex., Sept. 7.—In the Spindletop Field the Yount Lee Oil Co.'s No. 8 Gladys is flowing 4,500 bbls. a day, 70 per cent water, at 3,100 feet. It is an edge well. The Atlantic Oil Producing Co.'s No. 3 McLean is flowing 2,500 bbls. at 3,200 feet, 28 gravity crude.

Gordon and others' No. 1 Schaffer is flowing 1,500 bbls. at 4,200 feet in the Sour Lake Pool. The Humble Oil & Refining Co.'s No. 1 Lynd, Hull Pool, is flowing 2,700 bbls. at 4,300 feet.

The Texas Company is rigging for a test at Rattlesnake Mound, 15 miles southeast of Alvin, Brazoria County. It is one of the many known saline domes in the Coastal Plains Belt around which probably a dozen tests have been drilled in the past 15 years.

A total of 763 tank cars of crude were shipped from the Mirando Fields over the Tex-Mex Railway during August. Consignments eastward to Aransas Pass, Texas City and Houston were 662 cars and westward to Laredo and San Antonio 101 cars.

Twenty tank cars were loaded out of Bruni in Duval County, 15 going east and 5 west. Fourteen cars of crude left Noledo during August, which is the loading point for the Piedras Pintas Pool.

The Humble and Magnolia companies are buying and storing crude at Mirando City and Bruni. The Humble Pipe Line Co. has started running oil through its new 8-inch line from Bruni tank farm to its terminals at Engleside on the Gulf, near Corpus Christi. An average of 14,000 bbls. per day is being handled.

The attorney general's department at Austin says the Jefferson County commissioners have no authority to grant mineral leases on the highway that runs through the deep sand section at Spindletop for about one half mile. The highway is 60 feet wide and it was proposed to lease it to bidders for the mineral rights and then build a new highway to skirt the productive area. The state's legal department says it will be necessary for the commissioners to secure authority from the Legislature.

NIGGER CREEK'S NEW WELLS

MEXIA, Tex., Sept. 7.—The output of the Nigger Creek Field of Limestone County varied during the past week, passing the 20,000-bbl.-per-day mark, slipping slightly, and once more passed the 20,000-bbl. figure.

There are 33 wells completed in the field at this time, and a list of the daily production of 30 of them for the 24 hours ending Monday morning of this week follows:

Transcontinental Oil Co.:	
No. 1 Erskine	415
No. 1 Rosson	355
No. 2 Rosson	428
Nos. 3, 6 and 7 Rosson	3,182
Nos. 1-A, 2-A, 4-A, 5-A and 8-A	1,417
No. 1 Cochrun	185
Nos. 1, 2, 3 and 4 Cogdell	5,102
Nos. 1, 3 and 4 Atkins	642
Total	11,726
Godley Oil Co.:	
Nos. 1, 2 and 3 Rosson	1,320
No. 1-A Rosson	1,315
Total	2,635
Moss & Keeling:	
Nos. 1 and 2 Rosson	2,457
Atlantic Oil Prod. Co.:	
No. 1 Rosson	346
Murchison & Fain:	
Nos. 1 Bennett and 1 Holden	185
E. L. Smith Oil Co.:	
No. 1 Rosson	1,310
Barkley & Meadows:	
No. 1 Rosson	372
Total 30 wells	19,031

On Monday three additional wells were completed bringing the production to a figure of 22,083 bbls.

In the opinion of many who are familiar with this region, the peak production of the Nigger Creek Pool is very near. All of the good wells are situated in one part of the field, and the results of wells in other sections are very disappointing. Almost every well in the field is making water or b.s., the amounts ranging from 8 to 30 per cent.

The wells in the northeast section of the field are shut down, and there is considerable doubt if they will ever be started up again. The most active part of the field is the region close to the discovery well, and some idea of the theories of the operators in the field may be gained by examing the locations of new wells. These locations are made very close to present producing wells, and indicate that in the belief of the owners, the borders of the field will not be very wide.

At this time there are 24 drilling wells, 4 rigs, 4 locations, and 1 well shut down in the Nigger Creek district. Until some startling developments occur it is very unlikely that this figure will be passed. There have been 13 dry holes drilled since the discovery of the pool. The most of the failures have been drilled in the northeast section, but a few have been completed in the southern portion.

NEW MEXICO

ARTESIA, N. Mex., Sept. 7.—The Maljamar Oil & Gas Corp. announces it has closed a deal with the Illinois Pipe Line Co., branch of the Ohio Oil Co., for a pipeline from its station in the Artesia Pool to the Maljamar Pool in Len County. A 5-cent pipeline charge will be made, the crude to be bought on a flat basis regardless of gravity.

MEXICO

TAMPICO, Mex., Sept. 3.—Huasteca Petroleum Co. tallied up no less than 30,-

(Continued on Page 153)

PORT OF CORPUS CHRISTI EXPECTED TO FACILITATE CRUDE OIL MOVEMENT

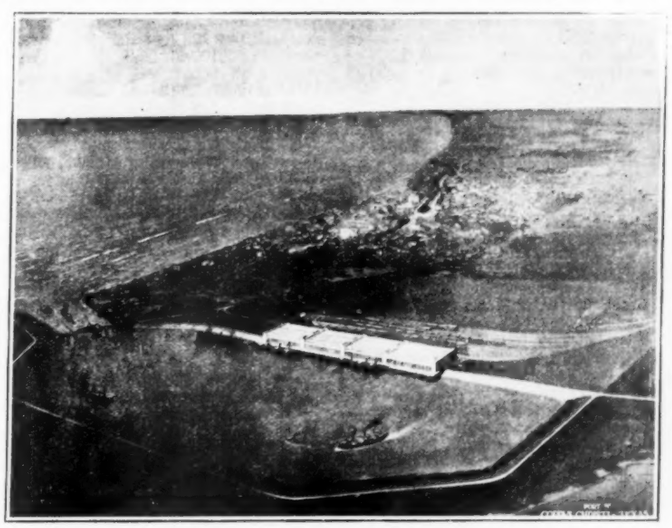
By Ralph Bradford

CORPUS CHRISTI, Tex., Sept. 4.—Elaborate preparations have been made for the celebration to be held here September 14 and 15, to commemorate the opening of the Port of Corpus Christi, which marks the completion of a deep-water project to the Gulf of Mexico and places this city in a position to develop into one of the important shipping points of the country.

The opening of Port Corpus Christi will not only be felt widely in commercial and transportation circles in south Texas, but will have a wide influence on the transportation of oil in the Southwest. Large quantities of oil from the Laredo district will move through the new deep waterway. It appears likely that oil shipments will concentrate around Harbor City and possibly at other points along the main channel.

Nearly $5,000,000 has been spent by the Federal Government and the local navigation district in developing the port. A channel 21 miles long and 300 feet wide has been dredged across Corpus Christi Bay from the jetties at Port Aransas.

The Humble Pipe Line Co. is completing its line from the Mirando Field to Harbor City, a few miles east of Corpus Christi. Much of the line from Bruni Station to Ingleside has been completed.



Airplane view of Port of Corpus Christi.

(Continued on Page 167)

Upton County Well Flows 4,000 Bbls.

Independent Producer Makes 3,200 Bbls. Through Half-Inch Bean, 40 Per Cent Water. Panhandle Reduced 589

By C. D. Lockwood
Staff Correspondent, North Texas Fields

FORT WORTH, Tex., Sept. 6.—The Independent Oil & Gas Co.'s No. 2 Emma Wooley, in Upton County, located about 600 feet west of the Dixie Oil Co.'s No. 2 Hughes, was the sensation of the past week in west Texas. It came in Friday afternoon at 5:30 flowing 4,000 bbls. through a 1-inch choke. The top of the pay and total depth is 2,160 feet, and the oil increased to 246 bbls. in one hour so the bean was reduced to one-half inch and the output under this restriction was 3,200 bbls. Sunday, 40 per cent of which was water. The net pipeline oil was nearly 2,000 bbls. While the large quantities of water in these two deeper wells, the Independent's No. 2 Wooley and the Dixie Oil Co.'s No. 4 Hughes, is discouraging to the operators, the water apparently does not cut the crude but settles out satisfactorily and the Kay County Gas Co.'s line accepts the oil.

When this well was drilled in, the Independent had two 500-bbl. tanks on the location and immediately erected three others. These were immediately filled, of course, and the oil is now flowing into earthen storage. The Dixie Oil Co.'s No. 4 Hughes is rapidly falling off, having produced only about 700 bbls. of oil Sunday with an equal amount of water. The same company's No. 2 Hughes, however, which has been producing for weeks from the upper pay, is still holding up remarkably well, having averaged about 1,700 bbls. daily during the past week. Another good feature of this well is that it is making no water.

While the Emma Wooley lease of the Independent Oil & Gas Co. is producing more oil now than the company's Taylor property in the Sapp Survey, C. F. Kelsey, who has charge of the Independent's operations in Texas, believes that the latter lease may prove in the long run to be even more valuable. No. 1 Taylor, which was completed February 24 of this year for 140 bbls., is still putting about 125 bbls. daily into the tanks, and No. 4 Taylor, 660 feet east of No. 1, flowed 400 bbls. Sunday, none of which was water. This well had the first oil, about 1,200 feet in the hole, at 2,039 feet, but found practically all of its production at 2,046 feet, total depth.

Uncertainties of Offsets

The irregularities of this west Texas country, and the uncertainties of drilling offsets to producing wells, can be seen in the northeast corner of the Taylor lease where the Independent's No. 7, south offset to the Marland Oil Co.'s No. 1 Benton Land Co., is drilling at 2,440 feet with practically no showing. The Marland well found its oil at 2,365 feet and there is practically no difference in surface elevation. The Independent's No. 6 Taylor, on the east line of the lease, offsetting Dixie's No. 1 Hughes, was drilling at 2,211 feet the latter part of las week; No. 8 was drilling at 2,057 feet and No. 9 had the rig completed. The Independent's No. 1 Hughes, west of Marland Oil Co.'s No. 1-C Hughes, was drilling at 100 feet. In the Sanger-Burleson district, southeast of the Hughes-Wooley-Sapp area, Dixie Oil Co.'s No. 7 Sanger got the top of the sand at 2,240 feet and was shut down. This well is in the northeast corner of the lease. Independent Oil & Gas Co.'s No. 2 Burleson, offsetting it, was drilling at 2,025 feet, and No. 3 at 1,565 feet.

The status of some of the other important wells in this Upton-Crane territory at the beginning of this week was as follows: Humble Oil & Refining Co.'s No. 1 Ricker & Dodson, fishing bit at 2,160 feet; Independent's No. 4 Wooley, offsetting it, drilling at 500 feet; No. 3 Wooley, offsetting Dixie Oil Co.'s No. 4 Hughes, drilling at 100 feet; Marland Oil Co.'s No. 2-C Hughes, in Section 86, setting casing at 560 feet; Bill Dunning's No. 1 Crier-McElroy, in Section 198, east offset to Gulf Production Co.'s No. 3 J. T. McElroy, topped the salt at 958 feet; Gulf Production Co.'s No. 3 Crier-McElroy, in Section 204, half a mile south of the discovery, topped the lime at 2,668 feet, steel line measurement; Tidal Oil Co.'s No. 1 University, west of Magnolia Petroleum Co.'s Church & Fields discovery, was standing with 2,000 feet of oil in the hole at 3,038 feet. Top of the pay is 3,013 feet.

Pipeline Possibilities

The possibility of a new pipeline into west Texas has been discussed by Texas oil men ever since the Dixie Oil Co. brought in its No. 2 Hughes for gusher production. Rumors concerning such a line have been passed around at frequent intervals during the past few weeks, and almost any circumstance which might possibly indicate that some concern is considering such a line starts a new flock of rumors. The Gulf Production Co. has been selected by universal opinion as the logical concern to build a line into west Texas, connecting with its main line at Ranger. The Gulf has ordered the construction of two 80,000-bbl. tanks for its McElroy wells which indicates a belief that considerable oil underlies that property. The fact that this block is being tested in all directions from the discovery at a distance of half a mile or more is taken as another indication that the Gulf wants to find out as soon as possible just what it possesses in Crane County. Officials of the company, however, deny that any definite decision has been made or that any action on a projected pipeline to this region is contemplated in the near future.

In Ector County, Skinner and others' No. 1 Buchanan in the northwest quarter of Section 20, Block 45, T-2-S, flowed 350 gallons of salt water an hour at 3,523 feet and was shut down. J. S. Cosden's No. 1-B Connell, in the southwest quarter of Section 16, Block 16, public school land, was drilling in lime below 3,565 feet.

In Tom Green County, M. D. Bryant and Marland Oil Co.'s No. 1 Llano County school land, was drilling at 2,890 feet.

North Central Texas

The Turbeville Pool, in Archer County, held the spotlight in north Texas during the past week as a result of some excellent new wells. Brown County again established a new production record with an increase of 321 bbls., making its daily average for the week 12,674 bbls. This was due to completions by the Humble Oil & Refining Co. and Curry & Moore, in the Dunn-Stover Pool and to a number of good completions by several concerns in the Cross Cut area. Shackelford County increased 434 bbls. daily during the week as a result of eight new producers in the Cook Ranch Pool. This put Shackelford County up to within about 400 bbls. of Stephens County again.

In the Turbeville Pool, The Texas Company's No. 5 Turbeville, in Block 172 of the Robert Carson Survey flowed 882 bbls. in the first 12 hours after the plug was knocked out. It had sand at 1,503-32 feet. This is one of the best wells completed in Archer County this year. The Simms Oil Co.'s No. 6 Turbeville-A, on the south line of their tract in the same section, was also an exceptionally good producer, having swabbed 450 bbls. in the first 9 hours and 700 bbls. in the next 12 hours from sand at 1,516-38 feet.

A semi-wildcat in Young County looking good for about 100 bbls. is the Panhandle Refining Co.'s No. 1 Prideaux, located about 3 miles north of Farmer, in the SW cor. of the company's 225-acre tract in the A. McMullen land, A-198. It picked up an oil sand at 715-30 feet which put 700 feet of oil in the hole.

In Stephens County, the Texas Fidelity Oil Co.'s No. 1 Pratt, NW cor. of Section 69, Block 6, T. & P. Survey, was making 24,000,000 feet of gas and had a show of oil at 1,906-70 feet.

In Eastland County, the Navarro Oil Co.'s No. 1 Clark, located on the west line of its lease in Section 9, Block 2, E. T. R. R. Survey, had a sand at 1,272-77 feet making 750,000 feet of gas, and then drilled 4 feet of shale into another sand at 1,281-1,302 feet. Neither sand carried water.

Semi-Wildcat Showings

A couple of semi-wildcats in Brown County attracted attention. Ratblott's No. 1 Jones had a show of oil in sand topped at 1,150 feet which correlates with the sand in the Fry Pool on the Chandoin Survey. This showing looks good enough to the owner to make him buy up everything he can get around the well. Smith and others' No. 1, in the Honeycut Survey, topped a sand at 1,120 feet and drilled 14 feet in. It was making 500,000 feet of gas and had a show of oil. This well about a quarter of a mile west of the Gibson Oil Corp.'s No. 1 White and looks as good as that well.

Curry & Moore's No. 3 Wooldridge, in the Cross Cut district, which flowed 20 bbls. an hour for the first 2 days after the bridge resulting from a 40-quart shot at 1,228-69 feet was knocked out, was still flowing 380 bbls. daily at the end of last week. It is worthy of mention that this well had 41 feet of this Cross Cut sand. The Humble Oil & Refining Co.'s No. 1 Armstrong, located on the east line of the northwest quarter of Section 2, Juan Delgado Survey, in the Dunn-Stover Pool, made 85 bbls. at 1,190-1,201 feet.

Panhandle Decrease

For the first time since July 1, the daily average estimated production of the Texas Panhandle fields decreased during the past week, although 46 new produc-

(Continued on Page 163)

COMPLETIONS DURING THE WEEK IN NORTH AND WEST TEXAS FIELDS

WEST TEXAS COMPLETIONS

Brewster County

Green Valley Oil Co.'s No. 2 J. P. Wilson was dry and abandoned at 2,170 feet.

Crockett County

J. S. Cosden's No. 1 Noelke was dry and abandoned at 3,275 feet.

Ector County

Henry Zweifel and others are plugging their No. 1 Johnson as a failure at 3,605 feet.

Howard County

Marland Oil Co.'s No. 2 Chalk swabbed 35 bbls. at 1,246-86 feet and 1,378-87 feet. It had a gas showing at 1,335-45 feet.

Midland County

Rook and Zimmerman's No. 1 Hill will probably be plugged at 3,715 feet, where it is shut down.

Mitchell County

Morrison & Thompson's No. 1 Hyman was dry and plugged at 3,100 feet.

Pecos County

Lloyd & Miller abandoned the location for their No. 1 Bonebrake.

Reagan County

Big Lake Oil Co.'s No. 77 University topped the lime at 2,820 feet and had pay at 2,920-36 feet, good for 20 bbls. on the pump; No. 78 had 2,000 feet of oil in the hole while drilling at 2,929 feet, top of pay at 2,896 feet, top of lime at 2,790 feet; No. 85 University topped the lime at 2,845 feet and flowed 343 bbls. from pay at 2,942-64 feet. Camp and others' No. 1 University had a hole full of sulphur water at 2,770-86 feet and was shut down.

Scurry County

Fogelson and others' No. 1 Haney was a location abandoned.

Upton County

Dixie Oil Co.'s No. 3 Hughes pumped 250 bbls. at 2,042-88 feet and was completed; No. 4 Hughes flowed 4,430 bbls. August 27; 4,364 bbls. August 28; 2,632 bbls. the next day, and 2,069 bbls. on August 30; 1,077 bbls. on August 31 and 1,169 bbls. September 1, 50 per cent of which is water. It is flowing through a five-eighths-inch choke. Independent Oil & Gas Co.'s No. 4 Taylor made 334 bbls. the first 23 hours from pay at 2,026-46 feet; No. 2 Emma Wooley was shut down for bradenhead at 2,150 feet where it swabbed 60 bbls. August 29, 33 bbls. August 31 and 40 bbls. September 1. Top of pay is 2,034 feet.

Marland Oil Co.'s No. 15 Burleson pumped 150 bbls. at 2,095-2,125 feet; No. 16 pumped 150 bbls. also at 2,095-2,115 feet; No. 17 topped the pay at 2,087 feet and was drilled to 2,140 feet, then plugged back to 2,128 feet and shot with 160 quarts at 2,100-25 feet, after which it pumped 45 bbls.; No. 18 pumped 155 bbls. at 2,088-2,115 feet after plugging back from 2,132 feet. Sun Oil Co.'s No. 3 Burleson pumped 225 bbls. at 2,070-2,117 feet. The Texas Company's No. 4 King swabbed and flowed 266 bbls. at 2,049-70 feet in the first 18 hours and flowed 359 bbls. August 31, 369 bbls. September 1, and 362 bbls. September 2; No. 2 Burleson pumped 145 bbls. at 2,-174-2,218 feet. Magnolia Petroleum Co.'s No. 1 O'Keefe was being put on the pump at total depth of 3,051 feet. It flowed and swabbed 120 bbls. August 31. Marland Oil Co. and F. P. Zoch's No. 2 E. S. Keith flowed 187 bbls. at 2,325-51 feet.

North Central Texas Completions

Archer County

American Refining Co. and others' No. 3 Turbeville made 172 bbls. at 1,494-97 feet. It had a small show of oil at 1,488-90 feet. G. J. Brown's No. 3 Perkins and others made 60 bbls. at 1,020-24 feet, total depth 1,046 feet. Perry Browning's No. 1 fee was dry and abandoned at 871 feet. Empire Gas & Fuel Co.'s No. 2 Parkey was also a failure at 1,750 feet. Same company and Moran's No. 1 Parkey-A flowed 175 bbls. at 1,576-77 feet and was being put on the pump. Magnolia Petroleum Co.'s No. 11 Parish-B made 40 bbls. at 1,558-66 feet; No. 6 M. Rutty-B made 15 bbls. at 840-50 feet.

Marland Oil Co.'s No. 2 Turbeville swabbed 150 bbls. in 12 hours at 1,510-

(Continued on Page 146)

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Expect Big Output From Seminole

Gulf Will Lay 8-Inch Line Into the Pool. Northwest Extension of Tonkawa Has a Disappointing New Well

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

With two Wilcox sand wells producing and the intervening space of 1½ miles being subjected to a very intensive drilling campaign, the Seminole Pool of Seminole County, is the most active and interesting spot in Oklahoma.

The discovery of Wilcox sand in the Gypsy Oil Co.'s well, in Section 24-9-6, has caused many old wells which had been producing from the Hunton lime to be drilled deeper in search of the richer yield found in the Wilcox horizon. The Barnsdall Oil Co. is the first concern to start drilling twin wells to those already making Hunton oil. Most of the Hunton wells are light producers, but the Barnsdall's two Hunton wells have performed very consistently and continue to make approximately 1,350 bbls. daily.

The Gypsy Oil Co.'s Wilcox sand well, No. 1 Carter, SE cor. NE NW, Section 24-9-6, is holding up at 3,800 bbls. daily, while the Independent Oil & Gas Co. and R. F. Garland's No. 1 Fixico, SW cor. NE, Section 26-9-6 (the first Wilcox sand well in the field) makes better than 5,400 bbls. each day.

Anticipating a huge production in this section, the Gypsy-Gulf interests have decided to build an 8-inch line from the Gulf Pipe Line Co.'s Grayson station to the pool. After this was decided, the Gypsy Oil Co. announced several new locations in the 9-6 territory. The locations were all made on leases where one well was already drilling.

The next well due in at Seminole is the Amerada Petroleum Corp. and Gardner Petroleum Co.'s No. 1, SE cor. SW NE, Section 23-9-6. The owners of this well passed up a well in the Hunton lime which was good for 300 bbls., and determined to test out the Wilcox sand. It is three-quarters of a mile west and two locations south of the Gypsy well. It should find the Wilcox sand within a few days, and if it should be a good well, a new trend will be discovered and much drilling activity will start on leases to the west of it.

The northwest extension of the Tonkawa deep sand pool received a jolt when the east offset of the Gypsy Oil Co.'s big well made only 650 bbls. This well, the Wentz Oil Corp.'s No. 14 Mahoney, SW cor. NW SE, Section 28-25-1w, found the sand at 4,272-91 feet, very little lower than the Gypsy well, which made 180 bbls. an hour at the time of discovery. The Wentz well is flowing by heads, and its limited production makes the locations between it and the producing edge of the old field look very discouraging. Many who have observed this operation, believe that good production will be found to the west of the Gypsy well, and think that another structure has been found. An outstanding incident of the field is that The Texas Company's No. 2 Siler, SW cor. NE, Section 28-25-1w, which started the revival of interest in this end of Tonkawa has gone dead. Efforts to revive its flow are now being made.

The Blackwell Oil & Gas Co.'s No. 1 Highly, SE cor. NE, Section 29-25-1w, a half mile west and two locations north of the Gypsy well, had a small well in the chat at 4,139-68 feet. The oil filled the hole and slopped over. The chat is found immediately on top of the Wilcox sand.

Failures in Wewoka

There were two failures in the Wilcox sand at Wewoka during the past week; Independent Oil & Gas Co. and Continental Oil Co.'s No. 3 Long, SW cor. NW, Section 32-8-8, which had a hole full of water at 4,198-4,210 feet, and the Humble Oil Co.'s No. 2 Garner, NE cor. SE NE, Section 5-7-8, which found a hole full of water at 4,097 feet and is being plugged back to the Hunton lime.

In Payne County, the Mulberry Oil Co.'s No. 4 Sharrum, NW cor. NE SW, Section 5-17-4, was drilled 3 feet deeper to a depth of 4,162 feet with no increase in production. The well is still making 360 bbls.

Shaffer Oil Co.'s No. 1 Cook, SE cor. SW, Section 31-17-5, is cutting 20 per cent and making 264 bbls. of fluid.

In the old Cushing Pool, the Mid-Continent Petroleum Corp.'s No. 2 Stewart, SW cor. SE SW, Section 15-17-7, Creek County, was drilled deeper from the Bartlesville to the Tucker sand found at 2,927-30 feet and made 480 bbls. from that horizon.

In Pawnee County, the Marland Oil Co.'s No. 2 School Land, "M," SW cor. SE NW, Section 33-20-5, made 125 bbls. from sand at 3,679-3,708 feet.

Osage County New Work

Indian Territory Illuminating Oil Co.'s No. 13, NW cor. NW SE, Section 15-29n-10e, is drilling at 360 feet. Barnsdall Oil Co.'s No. 42, NW Cor. SE NW, Section 35-29n-11e, is drilling at 540 feet. Mid-Kansas Oil Co.'s No. 11, NE cor. SW NW, Section 26-27n-5e, is a rig. Skelly Oil Co.'s No. 7, NW cor. NW SW, Section 26-27n-5e, drilling at 625 feet. Phillips Petroleum Co.'s No. 1, SW cor. SW SE, Section 7-27n-6e, is a rig. Kewanee Oil & Gas Co.'s No. 1, NE cor. NE SW, Section 34-27n-6e, is drilling at 150 feet. Same company's No. 1, SE cor. SE NW, Section 34 27n-6e, drilling at 100 feet. Its No. 2, NW cor. SW NE, Section 34-27n-6e, is a rig. Phillips Petroleum Co.'s No. 12, SE cor. NE SE, Section 20-26n-6e, drilling at 820 feet. Lewis Oil Co.'s No. 11, SW cor. SW NW, Section 29-25n-8e, drilling at 450 feet. Oliphant and others' No. 3, NE cor. NW, Section 31-25n-8e, drilling at 130 feet. Same company's No. 1, SW cor. NE SW, Section 32-24n-9e, is a rig. Sinclair Oil & Gas Co.'s No. 1, SE cor. NW, Section 5-23n-7e, is a rig. Peters Petroleum Co.'s No. 11, NE cor. SE, Section 12-23n-8e, is drilling at 55 feet. Prairie Oil & Gas Co.'s No. 2, SW cor. NW SW, Section 7-23n-9e, is drilling at 285 feet. New England Oil Co.'s No. 1, SW cor. SW, Section 17-23n-10e, drilling at 250 feet.

Osage County Completions

Winona Oil Co.'s No. 4, NE cor. SW SW, Section 21-29n-9e, shot with 120 quarts from Peru sand at 1,581-1,606 feet, made 10 bbls. Phillips Petroleum Co.'s No. 10, SE cor. SW SW, Section 1-27n-5e, had sand at 2,988-3,033 feet, made 700 bbls. initial production. Same company's No. 7, NW cor. SE SE, Section 7-27n-6e, made 280 bbls. the first 14 hours, after a shot of 105 quarts from sand at 2,935-92 feet. Owen Osage Oil Co.'s No. 369, SW cor. SE SE, Section 7-27n-11e, dry and plugged at 786 feet. Phillips Petroleum Co.'s No. 10, SE cor. NW SW, Section 21-26n-6e, shot with 90 quarts from sand at 2,932-79 feet, made 250 bbls., total depth 2,986 feet. Devonian Oil Co.'s No. 16, SE cor. SW, Section 34-25n-11e, was dry at 1,836 feet. Peters and others' No. 10, NE cor. SE, Section 12-23n-8e, had show of oil in sand at 2,430 to 2,445 feet; plugged back to Bartlesville sand at 2,070-2,137 feet; shot with 120 quarts from Bartlesville sand at 2,051-37 feet, made 100 bbls. Twin State Oil Co.'s No. 1, SE cor. NE, Section 12 23n-8e, shot with 100 quarts from Bartlesville sand at 2,055-95 feet, made 15 bbls. Barnsdall Oil Co.'s No. 1, SE cor. NE, Section 21-23n-8e, dry and plugged at 2,943 feet. Kewanee Oil & Gas Co.'s No. 5, NW cor. SW NE, Section 4-22n-11e, made 30 bbls. after shot with 80 quarts from Bartlesville sand at 1,666-99 feet, total depth 1,711 feet; No. 6, SE cor. SW NE, shot with 60 quarts from Bartlesville sand at 1,644-85 feet, made 35 bbls. Gypsy Oil Co.'s No. 1, SE cor. NW, Section 11-21n-7e, was dry at 3,390 feet. Sand Springs Home's No. 5, NW cor. NE, Section 5-20n-11e, made 40 bbls. after shot with 20 quarts from sand at 1,726-34 feet.

Kay County New Work

Comar Oil Co.'s No. 2-W Brown, SE cor. SE, Section 16-29n-1w, is a location, and so is No. 3-W, NW cor. SW SE, same section. Mid-Continent Petroleum Corp.'s No. 3 White, SW cor. SE SW, Section 16-29n-1w, and No. 4, NE cor. SE SW, same section, are both locations. Comar Oil Co.'s No. 6-W Harvel, SW cor. NW NE, Section 21-29n-1w, location. Its No. 8-W Priboth, SE cor. NE NW, Section 21-29n-1w, is also a location, and No. 11-W, NE cor. NW NE, same section, is a rig. Gypsy Oil Co.'s No. 2 Frost, NW cor. NW, Section 22-29n-1w, is a location.

Garfield County New Work

Aubyme Oil Co.'s No. 5 Seamans, NW cor. NE NW, Section 1-22n-4w, is spudding. Sinclair company is digging cellar for No. 18, NE cor. SW NE, Section 19-22n-3w.

Garfield County Completions

Sinclair Oil & Gas Co.'s No. 50 Walker, NE cor. SE NE, Section 13-22n-4w, had sand at 3,635-60 feet, made 1,172 bbls.; No. 54, SW cor. NE NE, had sand at 2,885-88 feet, made 140 bbls.; No. 55, NE cor. NW NE, had sand at 3,085-94 feet, made 140 bbls. Same company's No. 42 Hartley, NE cor. SW NW, Section 18-22n-3w, swabbed 300 bbls. in 24 hours from sand at 3,646-75 feet. Completed for 431 bbls. No. 50, NE cor. SW NW, Section 18-22-3w, had sand at 2,687-2,700 feet, made 400 bbls. Sinclair Oil & Gas Co. has abandoned its No. 1 Burns, C NE SE, Section 30-22n-3w, on account of bad fishing job, total depth, 5,428 feet. Danciger Brothers' No. 1 Crause, NE cor. NW, Section 25-20n-4w, is dry and abandoned at 3,002 feet.

Pawnee County New Work

J. B. Grieves' No. 5 Hoverkamp, CWL SW SW, Section 31-21n-8e, is a rig. Peter Adamson is spudding No. 8 Sigan, SE cor. SE cor. SW SW, Section 32-21n-8e. Magnolia Petroleum Co.'s No. 3 Fugate, NW cor. NE SW, Section 9-20n-6e, is a rig. Josey Oil Co.'s No. 6 Embry, SW cor. SE SE, Section 21-20n-6e, is a rig. Mid-Continent Petroleum Corp.'s No. 22 School Land, SW cor. SE NW, Section 16-20n-7e, is a location and No. 23, SW cor. NE SW, is a rig. G. Smith's No. 1-A Reigel, NW cor. NE NE, Section 27-20n-7e, is a rig. Sinclair Oil & Gas Co. is spudding No. 17 Brentnall, NW NW SW NE, Section 10-20n-8e. It has rig on ground for No. 12 Mullendore, NW cor. NE, in same section.

Pawnee County

Magnolia Petroleum Co.'s No. 1 School Land, NE cor. SE, Section 16-22n-4e, was dry at 4,133 fete. Devonian Oil Company's No. 2 Dobson, SW. cor. SE NW, Section 35-22n-6e, was shot with 20 quarts from sand at 2,677-84 feet, made 15 bbls. Its No. 1 Hayes, SW cor. NE, same section, had show of gas in

FIRST REPORTS OF OPERATIONS IN NORTH TEXAS AND PANHANDLE

Lipscomb County

Everett and others' No. 1 Mrs. H. D. May, center Section 612, Block 43, H. & T. C. Survey. McCorkle Oil Co.'s No. 1 H. O. Peery, center Section 733, Block 43, H. & T. C. Survey.

Hemphill County

Anrade and others' No. 1 F. M. Rumbold, 330 feet north and west SE cor. Section 44, Block 1, I. & G. N. Survey. S. R. Cockrell and others' No. 1 C. H. Shaller, 330 feet south and 1,000 feet west NE cor. John Fanning Survey. Hoover and others' No. 1 H. E. Hoover, 1,350 feet south and 1,250 feet west NE cor. Section 119, Block 41, H. & T. C. Survey.

Hutchinson County

Burge and others' No. 1 W. R. Harvey, 330 feet north and east SW cor. Section 40, Block M-21, T. C. R. R. Survey. Donald and others' No. 1 W. B. Haile, 1,650 feet south and 330 feet east NE cor. Section 17, Block L, E. T. & R. R. Survey, and located in Section 24, Block M-21, T. C. R. R. Survey. Dixon Creek Oil Co.'s No. 17-A H. E. Smith and others, 940 feet north and 330 feet east SW cor. NE, Section 14, Block Y. Empire Gas & Fuel Co.'s No. 4 Johnson Brothers-A, 330 feet north and 990 feet east SW cor. Section 68, Block 46, H. & T. C. Survey; No. 5, 330 feet north and east SW cor. Section 68, Block 46, H. & T. C. Survey; No. 2, Johnson Brothers-B, 330 feet north and west SE cor. SW NW, Section 21, Block Y; No. 3, 330 feet north and west SE cor. NW SW, Section 21, Block Y. Flanders Oil Co.'s No. 1 W. R. Harvey, 330 feet north and east SW cor. N half E half, Section 1, Block "LA", B. S. & F. Survey. Homestead Oil Co.'s No. 1 J. F. Weatherly, 330 feet south and west NE cor. Section 18, Block Y. J. K. Hughes Development Co.'s No. 6 W. L. Kingsland-B, 330 feet south and west NE cor. SW, Section 6, Block B-4, D. & S. E. Survey; No. 7, 330 feet south and 990 feet west NE cor. SW, Section 6, Block B-4, D. & S. E. Survey; No. 1 W. L. Kingsland-C, 330 feet north and 1,220 feet east SW cor. south 320 acres, Section 8, Block M-21, T. C. R. R. Survey. Phillips Petroleum Co.'s No. 2 Johnson Brothers-Dorsett, 330 feet north and east SW cor. north 160 acres, Section 64, Block 46, H. & T. C. Survey; No. 2 Johnson Brothers-Montford, 308 feet north and 282 feet east SW cor. E half north 160 acres, Section 66, Block 46, H. & T. C. Survey; No. 1 Johnson Brothers-Walling, 330 feet south and east W half Lot 6, Johnson Brothers Subdivision, Mary Whitley Survey, No. 1; No. 4 W. L. Kingsland, 330 feet south and east NW cor. N half, Section 6, Block B-4, D. & S. E. Survey; No. 2 W. L. Kingsland-Lansing, 330 feet north and 990 feet west SE cor. SE, Section 6, Block B-4, D. & S. E. Survey; No. 3, 330 feet north and 990 feet east SW cor. SE, Section 6, Block B-4, D. & S. E. Survey; No. 1 J. A. Whittenberg-Grub, 330 feet north and east SW cor. north 59 acres, south 236 acres, Section 65, Block 46, H. & T. C. Survey; No. 7 J. A. Whittenberg-

(Continued on Page 142)

The Wheat Straw
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To Bear Great Burdens
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Thus nature furnishes us the perfect pattern for bearing great physical burdens. Down through the ages, men have so employed it. Inventive genius has discovered no structural form approaching it in strength. So the Moore Derrick, the first tubular derrick, through its surpassing strength and dependability, has succeeded beyond the dreams of its creators in gaining and holding the confidence of the oil industry.
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sand at 2,643-75 feet, but no oil, and is dry and abandoned. National Refining Co.'s No. 2 Smith, NW cor NW SW SE, Section 25-20n-8e, shot with 20 quarts from sand 1,960-88 feet, made 30 bbls. Jim Moore's No. 1 Townsite, SE cor. SW, SE, Section 25-20n 9e, shut in for 2,000,000 feet of gas in sand 1,778-1,800 feet. Abicht Drilling Co.'s No. 1, Mitchell, NE cor. NW¼ SE, Section 27-20n-9e, dry and abandoned in the Turkey mountain sand at 2,942-50 feet.

New Work in Payne County

T. E. Mann is rigging up No. 3 Noble, NW cor. SE NW, Section 5-19n 8e. Empire Gas & Fuel Co.'s No. 6 Hayes, CEL SW NW, Section 26-18n-3e, spudding.

Payne County Completions

H. W. Skelly's No. 1 Manuel, NE cor. SW SW, Section 15-19n-6e was dry and abandoned at 3,315 feet. Gypsy Oil Co. has abandoned No. 1 Martin, NE cor. NW¼ Section 27-18n-3e, on account of bad fishing job at a depth of 4,725 feet.

New Work in Creek County

Devonian Oil Co.'s No. 5 Miller, CWL SW SE, Section 14-19n-8e, is drilling at 600 feet. Wiggins & Holme's No. 4 Morgan, SE cor. SW NE, Section 3-19n-9e, drilling at 1,450 feet. Dixie Oil Co. as rig on ground for No. 1 M. Tah-Ha-Ney, SW cor. SE, Section 7-19n-9e. Register Oil Co.'s No. 1-A Murrell, CSL SW NE, Section 17-19n-9e, is drilling at 2,200 feet. Bartlett Development Co.'s No. 1 Boyd, SE cor. SW, Section 28-19n-9e, is a location. Sand Springs Home is spudding No. 26 Atkins, CSL NW NE, Section 5-18n-7e. Silurian Oil Co.'s No. 27 Amy, NW cor. SW SW, Section 8-18n-7e, is a rig. Shaffer Oil & Refining Co. is spudding No. 1 Jones, NE cor. NW SW, Section 26-18n 7e. Its No. 11 Powell, CEL SE SW, Section 32-18n-7e, is a location. New England Oil Co.'s No. 1 Perryman, NE cor. SW, Section 5-18n-8e is a rig. McCullough Oil Co.'s No. 1 Nolan, SW cor. SW, Section 4-18n-11e, is a rig. Twin State Oil Co.'s No. 8 S. Jack, SW cor. SE, Section 9-18n-11e, is a rig. Regal Oil Co.'s No. 29, Bigpond, CNL NE SW, Section 6-18n-12e, drilling at 1,350 feet. Tidal Oil Co.'s No. 21 Richard, C SW SW, Section 4-17n-7e, is drilling at 620 feet. Mid-Continent Petroleum Corp.'s No. 10 Artusse, NE cor. NE, Section 14-17n-7e is a rig. Same company is rigging up No. 28 Stewart, NW cor. SE SE, Section 15-17n-7e. E. P Harwell's No. 1 Lasley, NE cor. SE SE, Section 4-17n-8e, is a location. Shaffer Oil & Refining Co.'s No. 1 Morrison, SW cor. SW, Section 16-17n-8e, drilling at 620 feet. In Section 20-17n-8e, Devonian Oil Co. and Billingslea's No. 1 Unallotted, CEL SE NE, Section 20-17-8, is drilling at 740 feet and the Transcontinental Oil Co.'s No. 1 Unallotted, NE cor. NE, Section 20-17 8, is drilling at 515 feet. Burke-Greis & Darby's No. 1 Scruggs, NW cor. NW, Section 21-17n-8e, is drilling at 725 feet, and No. 2, SE cor. NW NW, is a rig. Devonian Oil Co.'s No. 1 Scruggs, NE cor. SW NW, Section 21-17n 8e, is a rig. Transcontinental Oil Co. as a rig on the ground for No. 1 Kano, SW cor. NE NW, Section 21-17n-8e. Barnsdall Corp.'s No. 4 Mitchell, NE cor. SE SW, Section 22-17n-8e, is drilling at 860 feet. Savoy Oil Co. is rigging up No. 7 Johnson, SE cor. SW NE, Section 22-17-8e. Southwestern Petroleum Co.'s No. 3 Bruner, CEL NW NE, Section 27-17n 8e, is drilling at 820 feet. Texas Pacific Coal & Oil Co.'s No. 2 Harjoche, SW cor. NE SE, Section 22-17n-9e, drilling at 875 feet. Westland Oil Co. is setting the 10-inch casing at 1,415 feet in No. 2 Walker, SW cor. NW, Section 22-17n-9e.

Building Rig

Dixie Oil Co.'s No. 1, Francis, SE cor. SW SW, Section 5-17n-10e, is a rig. Independent Oil & Gas Co. is building rig for No. 1 Francis, SW cor. SE SW¼ Section 5-17n-10e. Nowata Oil Co. & Turman's No. 1 Pemberton, NE cor. NW NW, Section 8-17n-10e, is a location. McCullough Oil Co. is spudding No. 1 M. Ta-Con-Fah, CSL SW SE, Section 13-17n-10e. Jackson & Wise's No. 3 Dickson, NW cor. NW SW SW, Section 20-17n-10e, is drilling at 1,400 feet. Kirchner and others' No. 3-A Ko-Co-Con-Nay, CEL NE SE, Section 23-17n 10e is drilling at 1,200 feet. Pioneer Petroleum Co.'s No. 9 Bucktrot, CWL NW NE, Section 24-17n-10e, is drilling at 600 feet, and No. 10, SE cor. SW NE, is drilling at 580 feet. J. H. Wright's No. 11 Tahkaney, NE cor. SW SE, Section 24-17n-10e, is drilling at 1,780 feet. In the same section they have rig on ground for No. 11 Tahkaney, CEL NE NW. Skelly Oil Co.'s No. 1 Yellowhead, NE cor. SW SW, Section 32-17n-10e, is a location. Tidal Oil Co.'s No. 3 Arsayalee, NE cor. SW NE, Section 21-16n-8e, is drilling at 575 feet. Interocean Oil Co. is rigging up No. 4 Scott, NW cor. NW NE SW, Section 23-16n-8e. In Section 21-16n-9e, Love & Myers' No. 1 Hendrickson, NE cor. SE NW, is drilling at 620 feet. Chestnut & Smith's No. 3 Snow, NW cor. SW SW, Section 2-16n 10e, is drilling at 1,250 feet. Olean Petroleum Co. is spudding No. 1 Brush, NE cor. NE, Section 36 15n-7e. The Texas Company's No. 3 Yahola, SW cor. SW, Section 23-15n-8e, is a location. Carter-Davis' No. 1 Mathew, NE cor. SE NW, Section 18-15n-9e, is a location. C. G. Tibbens is spudding No. 1 McGilbray, SW cor. NE, Section 20-15n-9e. Producers & Refiners Corp.'s No. 1 Brown, SW cor. SW, Section 1-14n-8e, spudding. Gypsy Oil Co. is spudding No. 10 Ponds, NW cor. NW, Section 12-14n-8e. Skelly Oil Co.'s No. 15 McKan, NE cor. SW, Section 12-14n-8e, drilling at 897 feet. Shaffer Oil & Refining Co.'s No. 1 Coker, NE cor. NW NW, Section 17-14n-8e, is drilling at 600 feet. The Texas Company's No. 5 Johnson, CEL NE SW, Section 26-14n-8e, is a location. C. G. Tibbens' No. 12 Johnson, CSL SW NE, Section 26 14n-8e, drilling at 665 feet. He is also spudding No. 1 Bennett, NW cor. NW, Section 8-14n-9e. Hall & Donnelly's No. 2 Knight, NE cor. SE SW, Section 20-14n-10e, spudding. C. F. Noble has rig on the ground for No. 1 Scott, NW cor. SW SE, Section 20-14n-10e. T. B. Slick is spudding No. 1 Doyle, NW cor. SW SE, Section 32-14n-10e.

Creek County Completions

The Texas Company's No. 2 Ross, SW cor. SW SE, Section 13-19n-8e, shot with 80 quarts from sand at 2,189-2,225 feet, made 100 bbls. Dixie Oil Co.'s No. 1 Downs, NW cor. SW, Section 12-18n-7e, dry and abandoned at 3,670 feet. McCullough Oil Co.'s No. 1 Grayson, SE cor. SE, Section 20-18n-9e, was dry in the Wilcox sand at 3,178-202 feet. J. A. Hull's No. 1 Sier, NE cor. NE, Section 29-18n-9e, was dry in the Dutcher sand at 2,832-40 feet. Madden & Madden's No. 1 Marshall, SE cor. SW SW, Section 30-18n-10e, was dry and abandoned at 3,230 feet. Riverland Oil Co.'s No. 1 William Land, NE cor. SW NW, Section 1-18n11e, had the Wilcox sand at 2,088-92 feet, made 576 bbls. the first 24 hours. W. J. Cole's No. 1 Bombee, SE cor. NE NW, Section 22-18n-11e, shut in for 5,000,000 feet of gas. Day Brothers have a dry hole in No. 2 James, SW cor. SW NW NE, Section 6-18n-12e, at a depth of 2,030 feet. Regal Oil Co.'s No. 28 Bigpond, NW cor. NE SW, Section 6-18n-12e, shot with 12 quarts from sand at 2,000-14 feet, made 160 bbls. on the swab. Alvord & West's No. 1 Tucker, SE cor. SW SW, Section 15-17n-8e, was shot with 80 quarts from Peru sand at 2,277-2,313 feet, and made 65 bbls. of oil and 20 bbls. of water. Prairie Oil & Gas Co.'s No. 3 Hope, SW¼ cor. SE SW, Section 3-17n-9e, shot with 80 quarts from Peru sand at 2,021-43 feet, made 60 bbls. and a show of water. Its No. 4 Hope, NW cor. SE SW, was shot with 80 quarts from sand at 2,028-59 feet, made 60 bbls. McCullough Oil Co.'s No. 1 Dice, NE cor. SW, Section 24-17n-9e, was dry and abandoned at 3,470 feet. Nowata Oil and Refining Co. and Turman & Independent Oil & Gas Co.'s No. 1 Pemberton, NW cor. NE NW, Section 8-17n-10e, had pay sand at 3,008-29, total depth in sand, flowed 300 bbls the first 24 hours. Completed for 295 bbls. on the swab. Independent Oil & Gas Co.'s No. 2 Dixon, SE cor. SW, Section 19-17n-10e, shot with 80 quarts from sand at 2,087-2,129 feet, made 40 bbls. on the swab. W. R. Dillard and others' No. 1 C. Thomas, C NE NW, Section 22-17n-10e, was dry at 3,205 feet. Mid-Continent Petroleum Corp.'s No. 2 Dawson, NE cor. NW¼ SW, Section 24-17n-10e, shot with 80 quarts from the Red fork sand at 1,800-39 feet, made 25 bbls. D. B. Mason's No. 5 Broodnox, NW cor. NE SW, Section 23-16n-8e, had the Dutcher sand at 3,114-15 feet, flowed 2,000 bbls. the first 24 hours with 24 per cent B. S. and water. C. B. Tibbens' No. 1 Williams, SE cor. SE, Section 22-15n-8e, made 30 bbls. after a shot of 70 quarts from the Peru sand at 2,430-75 feet.

New Work in Tulsa County

E. A. Craig's No. 1 Ernest, NW cor. SW SW, Section 17-19n-10e, is a rig. W. E. Holmes' No. 4 Timothy, SE cor. SW NE, Section 22-19n-10e, is drilling at 400 feet. Sand Springs Home is moving in machine for No. 1 Cates, SE cor. NE, Section 4-19n-11e. Its No. 1 Arch, NW cor. SE NW Section 23-19n-11e, is drilling at 875 feet. Also it is rigging up No. 2 Jefferson, SE cor. NE, same section. Riverland Oil Co.'s No. 3 Anderson, CWL SE NW, Section 34-19n-11e, is drilling at 1,365 feet.

Tulsa County Completions

The Texas Company's No. 2 Scott, SW cor. SW NW SE, Section 10-19n-10e, is shut in for 6,000,000 feet of gas at 1,852 feet. Holmes and others' No. 1 Doyle, C NE SW, Section 16-19n-10e, shot with 40 quarts from sand at 1,936-47 feet, made 10 bbls. W. E. Brown's No. 5 Unallotted, CNL SE SW, Section 23-19n-10e, dry and abandoned at 1,925 feet. Red Bank Oil Co. has a dry hole in No. 3 Postoak, NE cor. SW SW, Section 23-

(Continued on Page 138)

QUIET WEEK IN KANSAS FIELDS WITH CHIEF INTEREST IN SUMNER

By J. L. Dwyer
Staff Correspondent, Kansas Fields

The past week was very quiet in the Kansas fields. Considerable interest is being displayed in the Sumner County region which was opened up two months ago by the Roxana Petroleum Corp. Roxana's No. 1 Churchill, NE cor. SW Section 25-31-2 which found the sand at 3,375 feet is still producing 421 bbls. on the swab. No. 1 Van Sickle, a shallow sand well is making 950 bbls. from a depth of 1,885 feet. This well is about five weeks old. No. 1 Mason, SE cor. SE NW, Section 25-31-2, is making 825 bbls. from sand 1,842-85 feet. No. 1 Ritter, SW cor. NE, Section 35-31-2 is producing 300 bbls. from sand 1,835-85 feet. No. 1 Miller, NE cor. SW, Section 17-32-2 (the first 1,800-foot well) has been put on air, and is producing 400 bbls. These wells follow what is supposed to be the axis of a granite ridge running southwest-northeast from the Towanda Field of Butler County.

A number of wildcat tests were reported dry and abandoned.

Greenwood County

The Texas Company's No. 1, NW cor. SW Section 29-22-10, Greenwood County, had sand at 2,404-35 feet and made 200 bbls. after a shot of 60 quarts. Blackwell Oil & Gas Co. has abandoned the location for No. 1, NW cor. SE, Section 31-22-10. Fisher-Louck and the White Eagle Oil Co.'s No. 5, NW cor. SE NW, Section 12-22-11 had sand at 1,754-812 feet, and started at 100 bbls. after a shot of 120 quarts.

Phillips Petroleum Co.'s No. 15, NW cor. NW, Section 32-23-10, had sand at 2,345-65 feet and made 50 bbls. the first day, after being shot with 40 quarts and with 100 quarts. The Texas Company's No. 1, NW cor. NW, Section 36-23-8, found a dry sand at 2,552-66 feet and was abandoned at 2,572 feet. Manhattan Oil Co.'s No. 1, SE cor. NW, Section 2-22-10, had sand at 2,062-2,140 feet, and made 430 bbls. on the swab in 24 hours after a shot of 260 quarts. Hazlett and others' No. 21, NW cor. SW SE, Section 12-22-10, was dry and abandoned at 2,692 feet. No. 22, NE cor. SW SE, Section 12-22-10 had sand at 2,238-56 feet and is estimated at 10 bbls. after a shot of 60 quarts. D. M. Rhodes No. 6, NW cor. SE SE, Section 18-22-10, got sand at 2,366-2405 feet. It was shot with 10, with 20, and with 30 quarts and made 115 bbls. in 24 hours. York State Oil Co.'s No. 3, SE cor. SW NW, Section 32-22-11 started at 100 bbls. a day from sand at 1,967-2,029 feet, after a shot of 140 quarts. No. 6, NE cor. SW NW, Section 32-22-11 made 75 bbls. after a shot of 140 quarts in sand 1,987-2,027 fet. Swartz and others' No. 1, NE cor. SW, Section 17-23-11 is dry and abandoned at 2,024 feet.

New Work in Greenwood.

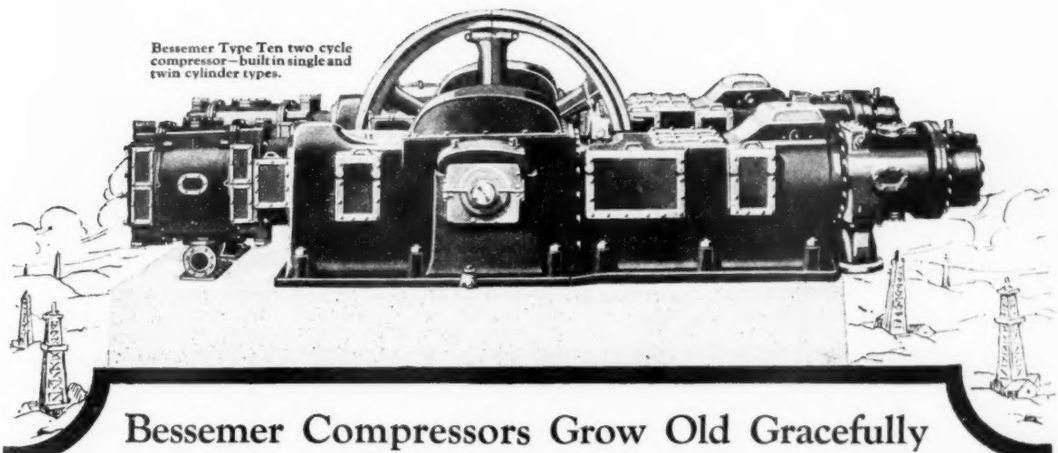
Manhattan Oil Co. has spudded No. 2, NE cor. SW SE, Section 2-22-10. Phillips Petroleum Co. is rigging up No. 3 Green, NW cor. NE NE, Section 11-22-10. The rig is up for No. 1-A Green, NE cor. NW NE Section 11-22-10. Sinclair Oil & Gas Co. has the rig up for No. 47 Browning, C NE SW, Section 20-22-10. Empire Gas & Fuel Co.'s No. 15, NE cor. NW SE, Section 11-22-11, is drilling at 250 feet. Callahan and others are rigging up No. 1 Brown, NE cor NW SW, Section 23-22-11. Skelly Oil Co. has rigged up a machine for No. 16 Hicks, CWL SW NW, Section 27-22-11. Simmons and others have spudded No. 4, SE cor. SW NE, Section 4-22-12. The Texas Company's No. 3, SE cor. NW NE, Section 4-22-12 is drilling at 240 feet. Empire Gas & Fuel Co. has the rig on the ground for No. 1 Schwab, SW cor. SE SE, Section 25-22-12. Marland Oil Co. has the rig up for No. 1 Edwards, SE cor. NW Section 7-23-11. Pure Oil Co. has rigged up No. 6 Oliver, SE cor. NE SE, Section 8-23-11. Simmons and the Amerada Petroleum Co. have the rig up for No. 6, SE cor. SW SW, Section 9-23-11. The Texas Company has spudded No. 2, SW cor. NW NW, Section 16-23-11. No. 1, NE cor. SE NE, Section 17-23-11, is drilling at 400 feet. H. J. Wilson has rigged up a machine for No. 1 Wormzler, NE cor. SW, Section 12-23-12.

Butler County

Sheldon & Brannon abandoned the location for No. 1, NE cor. SE SE, Section 28-26-9 Butler County. Beacon Oil Co.'s No. 2, NW, cor. NE SE, Section 23-26-9 had sand at 2,215-42 feet, and made 60 bbls. the first 24 hours. White Eagle Oil Co.'s No. 3, NE cor. SE SW, Section 12-27-7, had sand at 2,115-25 feet and is estimated at 25 bbls. No. 2, SW cor. SE SW, Section 12-27-7, was standing with 800 feet of oil in the hole from sand at 2,641-92 feet. Phillips Petroleum Co.'s No. 1, NE cor. NW, Section 13-27-7 has 200 feet of oil in the hole from sand at 2,671-96 feet. Manhattan Oil Co.'s No. 6, NW cor. SE SE, Section 28-27-7 had sand at 2,735-41 feet and is making 7 bbls. a day after a shot of 30 quarts. Gled Oil Co.'s No. 2, C NE Section 28-29-6, had a show for a 10-bbl. well in sand at 2,250-65 feet.

Allison & Fitzwilliams' No. 4 Provotky, SE cor. SW NW, Section 3-28-6, is a rig on the ground. Tom Johnson has a rig on the ground for No. 3 Blakeman, NE cor. NW SW, Section 3-28-6. Magnolia Petroleum Co. has built the rig for No. 1 Stephens, SE cor. NE, Section 4-28-6. Neely Oil & Gas Co.'s No.

(Continued on Page 109)



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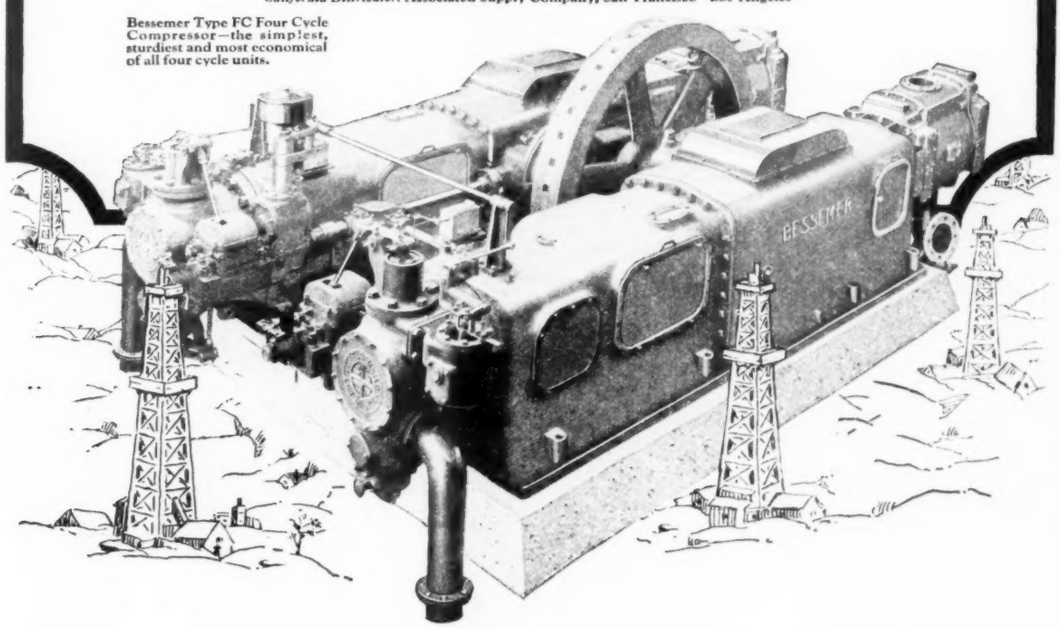

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Bruni and Randado Report Producers

Add 1,150 Bbls. to Flush Production of Southwest Texas Fields. Carolina-Texas and Cole Areas Get 3 Gassers

By D. B. Stephenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Sept. 6.—Five oil wells, completed last week, three in the Bruni tract extension of the Mirando Field and two in the Randado Field in Jim Hogg County added 1,150 bbls. to the flush production of the field and three gas wells, one on the Carolina-Texas and two in the Cole Field added 110,000,000 feet of natural gas.

The week was a fairly quiet one due to the Randado Field and the Bruni tract extension getting fairly well drilled up and with fewer rigs running in those fields. Staley & Wynnne completed their No. 19 estimated at 500 bbls. and their No. 20 estimated at 200 bbls. in the Bruni tract and Ruthada Oil Co. (Frank Ketch) completed No. 5 Bruni estimated at 225 bbls., making 925 bbls. of flush production added to that field. In Randado Field, Houston Gulf Gas Co. completed No. 13 Palacious estimated at 75 bbls. and E. L. Smith Oil Co. and C. O. Maddox completed their No. 3 Palacious, estimated at 150 bbls.

The gas wells completed in the Mirando territory include the Murchison & Fain No. 1 Webster in the Carolina-Texas Field estimated at 40,000,000 cubic feet of dry gas and in the Cole Field Gulf Production completed its No. 1 King-Harper on Survey 323 estimated at 35,000,000 feet and Barkley & Meadows and Morgan completed their No. 4 Benavides estimated at the same amount. The Gulf Production Co.'s well is 1½ miles north of the Cin-Tex discovery oil well in that field and is a south offset to the Barkley & Meadows and Morgan No. 1 King-Harper which was recently completed as an oil well. They are all in the same horizon at a little less than 1,800 feet.

Spraying Oil

Associated Oil and Usher Carson's No. 3-D Webster, the south offset to their discovery oil well in the Carolina-Texas gas field in Webb County, tested salt water at 2,612 feet and The Texas Company's No. 1 Webster, the north offset to the Associated-Carson discovery oil well, tested an 40,000,000-foot gas well spraying a small amount of oil at 2,614 feet. Associated-Carson's No. 1-D Webster, the east offset, is a dry hole as reported a week or two ago and the west offset to the discovery well, the Associated's No. 2-F, is a 40,000,000-foot gas well reported a couple of weeks ago. During the past week Murchison & Fain completed their No. 1 Webster, one location west and about three locations south of the discovery oil well. It came in at 2,602 feet estimated at 40,000,000 feet of gas. The discovery well is still flowing more than 200 bbls. of oil a day but has been offset on all sides without getting another oil well.

This situation is getting the most attention in southwest Texas at this time and there is simply no explanation that will reasonably account for it. Southwest Texas has been rather "hard hit" with similar situations during the year thus far. Humble Oil & Refining Co. on the Piedras Pintas salt dome at Noleda last December brought in a good well of high gravity oil at 3,623 feet but several wells drilled around it proved dusters and Humble is now struggling with a west offset which looks like the first producer since the discovery well. In the Cole Field Cin-Tex Petroleum Co. in Duval County brought in a good well on Block 16 of Section 10 and only six other wells have found the same pay and the restricted area has been circled by others that failed to get oil.

Balanced against these disappointments of the year thus far, however, is the Bruni extension of the Mirando Field which at around 1,700 feet has been producing a lot of fine wells and a remarkably profitable producing spot, the Randado Field in Randado, which is giving some fine production and is proving a profitable little field and the Kitselman & St. Albans' new proven spot in the area a little over a mile northeast of the Henne, Winch & Fariss Field in Jim Hogg, first opened a few months ago and now consisting of several fine wells and promising to make a nice little pool.

Also a new pool, the O'Hern-Seacord Pool, is coming into existence 6 miles south of the Cole gas field in Duval. Several new locations have been made around the big gasser that was brought in two weeks ago spraying oil and drilling will be under headway at once on these new locations in the expectation of picking up oil production.

Webb County-Bruni

Associated Oil Co. on Block 44 is drilling at 781 feet in its No. 3 Bruni. Staley-Wynne's No. 18 Bruni on west half of Block 18 is drilling at 1,722 feet in sand and has derricks up for Nos. 19 and 20 on the same block. Sun Oil Co. on the south half of Block 44 in its No. 5 Bruni tested dry at 2,889 feet and is plugging back to 1,735 feet for another test. Gibson Oil Corp. on the west half of Block 13 has completed its No. 10, the last of the outside locations on the 60-acre lease, all producers. Straube & Straube in their No. 1 Bruni on Block 19 have the derrick up. Lawrence-Neal and others have the derrick for their No. 1 Bruni on Block 41. Harper and others on Survey 835 in No. 1 Bruni lost their returns on account of cavity. Simms Oil Co. on the same survey has 16,000,000 feet of gas at 1,592 feet with 320 pounds rock pressure. On the southwest one-fourth of Block 13, Ball & Murchison & Fain in their No. 8 Bruni are drilling at 1,400 feet.

Webb-Older Mirando Area

The older part of the Mirando Field to the north of the Bruni tracts, Alonzo Oil Producing Co. is 1,600 feet in its No. 7 Garcia and is coring for sand. This is located on survey 605. Crown-Central on Survey 606, Lot 56, in its No. 10 Garcia is drilling at 2,950 feet, and has made location for its No. 13 Garcia, same survey, but on Lot 27, and has derrick up on the same survey for its No. 12. On Block 28 of Survey 606 it has made location for its No. 14 Garcia. On Survey 592 R. F. Duggan is shut down at 1,825 feet in his No. 1 Garcia.

Webb-Carolina-Texas

Associated-Carson in No. 3-D, south offset to discovery well of that field, tested hot salt water at 2,612 feet and in No. 4-D, east offset to Murchison & Fain, is drilling at 2,550 feet. Associated Oil Co.'s No. 1-B Webster, on Survey 684 is in hard rock at 124 feet, and on same survey in the No. 2-B Webster is in the sand at 3,005 feet. This well is a south offset to Morgan Brothers and Killam-Suladie's well. The Texas Company's No. 1 Webster, north offset to the discovery well, on Survey 684, made 8,000,000 feet of gas at 2,614 feet, and on same survey in its No. 2 Webster is drilling at 2,098 feet, and its No. 3 Webster is drilling at 2,280 feet. Magnolia Petroleum Co.'s No. 1 Webster on Survey 684 is drilling at 2,450 feet. Morgan, O'Hern & Seacord in their No. 1 Webster on Survey 684 have abandoned at 2,599 feet. Morgan Brothers-Killam's No. 1 Webster, Survey 684, is standing at 300 feet. Morgan Brothers, Daniel & Best's No. 1 Webster, on Survey 684, is waiting for water. Morgan Brothers' No. 1 Benavides on Survey 679 is ready to spud in. On Survey 268 Houston Oil Co. in its No. 1 Barnsley is standing at 1,800 feet waiting for water. Moody Oil Corp. in its No. 1 Benavides, Survey 688, is ready to spud in. Murchison & Fain, in Survey 684 in their No. 1 Webster, are drilling at 2,602 feet. Hazlitt-Simmons is standing at 2,000 feet waiting for water in No. 1 Barnsley in Survey 268, Block 9. In Survey 335, Block 11, they have spudded in and are waiting for water in their No. 1 de la Garza. U. S. Gas & Oil Co. is standing at 2,140 feet waiting for water on Survey 679 in No. 1 Benavides. Killam-Winch on Block 12, Survey 336, in their No. 2 de la Garza are in lignite rock at 2,713 feet. On Block 8, Survey 689, Brashara-Neal have made location for their No. 1 Benavides.

Jim Hogg-Randado Field

In the Randado Field in Jim Hogg County, Grayburg Oil Co. is drilling at 1,100 feet in its No. 6 Weil on Block 15, Survey 81, and has made location for its No. 7. Johnson and others on Survey 291, Block 3, have derrick up for their No. 11 Palacious, and on same survey, Block 2, derrick up for their No. 12. On Block 11, Survey 291, Houston Gulf Gas Co. is drilling at 1,950 feet in its No. 12 Palacious, and on Block 20 is drilling at 1,236 feet in its No. 13 Palacious. Bashara-Maddox on Survey 81, Block 8, in their No. 1 Weil, have

(Continued on Page 145)

BIG GASSER IN DUVAL COUNTY SPRAYS OIL WHEN OPENED

By B. D. Stevenson

SAN ANTONIO, Tex., Sept. 6.—O'Hern & Seacord's No. 1 Benavides in Duval County, 4 miles southeast of Bruni which came in a 50,000,000-foot gas well spraying oil has been opened and made more oil each time, but sand cut the fittings so badily that the owners have decided to keep the well shut in for fear it may get wild and damage the new pool it has opened. The well is the newest and most important indication of a new oil pool in southwest Texas at this time. A new hole has been started by O'Hern & Seacord located 450 feet north of the No. 1 and it is now drilling at about 300 feet and with the log of the No. 1 to check by is expected to make rapid progress. The location is believed to be in the direction of oil production.

Atascosa County

W. G. French is drilling at 1,225 feet in his No. 1 Jaks'k in the northeastern part of the county near Lemmberg and has been encountering considerable work.

Bexar County

Marland Oil Co. is tearing down the core drilling rig on its No. 2 Mihalski in the eastern part of Bexar County.

Bastrop County

The Atlantic Oil Producing Co. is arranging to drill another test in the Cedar Creek district in Bastrop, John T. Storey is arranging to drill in the southeastern part of the county and the Gulf Production Co. will probably drill another test on its block south of Elgin.

Blanco County

G. L. Jones and others have spudded in their test in Blanco County on the Pedernales River and are drilling at 50 feet.

Brooks County

Ballard & Underwood's No. 1 Lasater in the northeast part of Brooks County, which has been fishing for more than a month, has the hole cleared, total depth 2,212 feet. The Roxana Petroleum Corp. has closed a deal for 29,604 acres, the north half of which lays in the southwestern corner of Brooks County. The lease was secured from the Allen Land & Cattle Co. of New York which owns the land in fee and which reserved 10,000 acres across the north end of the ranch which is known as the Rochelle ranch. The Roxana has put in a crew of men and a seismograph and will do very extensive work on the tract before beginning to drill.

Caldwell County

Fred Adams' No. 1 Kelly, located northeast of the Luling Field, is drilling around 2,200 feet and has not encountered the chalk. It is running a little low.

Gonzales County

Bristol Oil & Gas Co. is shut down at 2,000 feet in northwestern Gonzales County in the No. 1 R. M. Denman, the rig being considered too light to drill deeper. A heavier rig may be installed.

Guadalupe County

Davis & LeBaume have spudded in the No. 1 Keller in Guadalupe County a little north of New Berlin. J. M. Davis and others have a showing of oil at 745 feet in the No. 1 Rosenbrock on a Payne & Bond lease a little south of New Berlin and set casing to test. The cement failed to hold the first time and the casing is being reset. It had a fairly good showing. J. M. Davis has the derrick up for a test on the Weinert land in the northern part of Guadalupe. His No. 1 Pooley in the northern part of the county is drilling at 1,641 feet.

Hays County

J. E. Rodgers and others' No. 1 Hohenberg in Hays County is drilling at 600 feet.

Karnes County

Earl B. Reynolds' No. 2 Butler in Karnes County is drilling at 1,280 feet and has recently two or three breaks in the formation showing gas.

Kleberg County

Lease transactions indicating probable wildcat activity have taken place in Kleberg County southeast of Kingsville where the Humble Oil & Refining Co. months ago got a producing oil well many miles from any other production and indicating presence of a pool. Humble has started its No. 1-B Dennett and its No. 1-C Dennett. One is a location north and the other a location northeast of the Humble's Kleberg trustee No. 2. One spudded in August 26 and the other was ready to start at last reports. No. 1-B, with heavier derrick and rig, will set 10-inch casing to the oil sand. Humble has been getting producing oil wells but has had a little trouble with water and there is one theory that it is on the south edge and is moving to the north for the new locations. There are seven oil bearing sands in some of the producers completed. Humble holds a big block of leases and first reports were that it controlled everything for miles around. This seems to have been incorrect. The Texas Company has lately bought some important close in blocks, and there have been other transactions with other concerns running into considerable money. The field was first in-

(Continued on Page 110)

The Dodo Bird Isn't Any Deader Than the Cotter Pin and the Bent Nail in Oil Well Chain

The Rex Pinlock

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Next the pin is put in place

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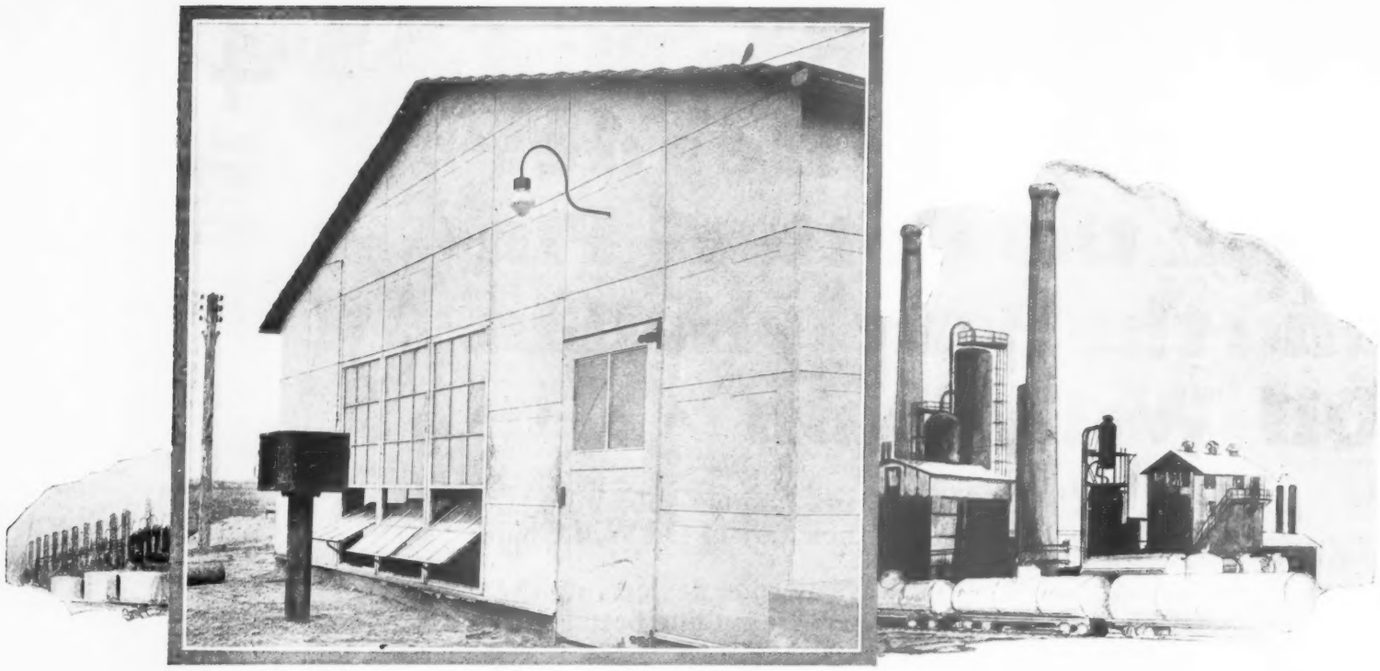

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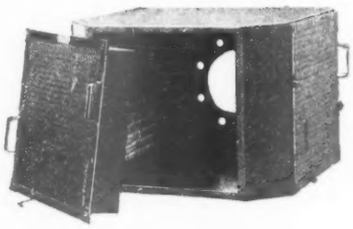

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Hope of Trinity Horizon Production

Haynesville Test Feature of Week in Louisiana Field. Wildcat in Old Lawson Area Outstanding in Arkansas

By James H. Dameron
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Sept. 4.—Standing with 3,000 feet of oil and a trace of salt water in the hole, Gilliland Oil Co. and Ramsey's No. D-1 Taylor, CSL SW SW, Section 14-23-8, in the heart of the Haynesville Field, featured the week in Louisiana while another wildcat in the Lawson area was outstanding in Arkansas.

The Haynesville test gives promise of opening up that declining field for Trinity horizon production. Oil is coming from 17 feet of broken formation topped at 4,513 feet and tested 34.5 gravity. The water showing is slight.

Several months ago when the deep test was started Ramsey is reported to have obtained a half interest in all deep sand production in the Haynesville Field from the Gilliland leases for financing the deep test. Gilliland owns fifteen 80-acre leases checker-boarded in the field. Most of the leases are productive. Ohio Oil Co. holds the most acreage in Haynesville.

Walber Well

Another important development in the Lawson area in Union County, Arkansas, was the bailing in of Walber and associates' No. 2 Cordell, Section 6-19-13, in the 2,900-foot zone. The hole is standing with 2,000 feet of fluid variously estimated to be 50 to 60 per cent salt water. The oil is light and tested 29.5 corrected gravity.

Immediately after the showing was revealed Walber sold his interest to Garret and Modiste and James and King, of El Dorado. He is reported to have received $10,000 cash and is to receive $40,000 by the fifteenth of the month and $50,000 from the first oil. Walber is said to have owned a half interest in 620 acres and the drilling rig.

Lawson came to the front more than a week ago when Simms Oil Co. and Sun Oil Co.'s No. 1 Simmons, Section 9-18-13, blew in at 2,650 feet making 30,000,000 feet of gas and 20,000 bbls. of salt water. Smackover was discovered in a similar manner and operators started a wild scramble for acreage, some paying as high as $500 an acre for offset acreage.

The wildcat wrecked the derrick. The well was closed in a few days later. Efforts are being made to get returns.

PRODUCTION BY FIELDS

Louisiana

Bellevue	2,010
Caddo light	9,850
Caddo heavy	3,015
Cotton Valley	7,325
De Soto and Red River	4,150
Elm Grove	525
Haynesville	9,525
Homer	5,500
Urania	14,900
Total	56,800

Arkansas

Smackover heavy	122,610
Smackover light	14,890
El Dorado	7,026
Lisbon	8,590
Nevada	1,990
Stephens	1,850
Total	156,956
Total both fields	213,750
Total last week	212,662
Difference	1,088

Monroe Purchase

Announcement was made during the week by the Natural Gas & Fuel Corp., of El Dorado, of that company's purchasing of acreage in the Monroe gas field in Louisiana. One thousand acres of proven territory was purchased from T. E. Easterling for $105,000 cash. Most of the acreage lies in Sections 21 and 29, Township 9, Range 4 east, and the remainder close by, all in Ouachita Parish. There is no production on the property and the Natural Gas & Fuel Corp. acquired it with a straight 5-year commercial lease.

A 1,000-bbl. gain in Smackover heavy was responsible for the district's increase in daily average production. Urania, in Louisiana, made a 600-bbl. gain but that was not sufficient to offset the losses in other fields and Louisiana lost a few barrels in daily average when compared to the previous week's report. The old Caddo light oil field fell out of the list of 10,000 bbls. or better pools when it lost 200 bbls.

ARKANSAS COMPLETIONS

Union County

Lisbon accounted for 10 of Union County's completions during the past week, with Magnolia Co.'s No. 2 Halsey, Section 20-17-16, a 20 bbl. pumper at 2,127-58 feet, leading the list. Eason and associates' No. 3 Mooty, Section 22-17-16, is pumping 10 bbls from sand at 2,137-67 feet. Gulf Refining Co.'s No. 4 Parker, Section 21-17-16, is making 25 25 bbls. on the pump from sand at 2,127-38 feet. Gulf Refining Co.'s No. 4 L. Primm, Section 21-17-16, is pumping 25 bbls. from sand at 2,110-55 feet. Lion Oil and Refining Co.'s No. A-16 Mitchell, Section 17-17-16, was finished in sand at 2,143-73 feet, making 1,000,000 feet of gas and spraying a little oil. Magnolia Co.'s No. 2 Slaughter, Section 8-17-16, is a 20-bbl. pumper at 2,072 to 2,113 feet. J. L. Meeks' No. 1 Milner, Section 15-17-16, is pumping 6 bbls. from sand at 2,157-2,202 feet. Ohio Oil Co.'s No. 2 F. M. Stokes, Section 21-17-16, is pumping 20 bbls. from sand at 2,120-65 feet. Southern Crude Oil Purchasing Co.'s No. 1 Tooker, Section 3-17-16, is pumping 8 bbls. of fluid, 50 per cent salt water from sand at 2,035-65 feet. The well is in the extreme northeast end of the field. Rovenger Oil Corp. abandoned the derrick for No. B 1 Dumas, Section 22-17-16.

But Two at Smackover

In Smackover only two completions were recorded. Hollayfield and McFarlane's No. 10 Giller, Section 11-16-15, was plugged back from 2,693 to 2,000 feet and is pumping 95 bbls. Magna Production Co.'s No. 6 Tatum, Section 17-16-15, is pumping 75 bbls. of fluid, 95 per cent salt water, from sand at 2,007 feet.

Ackerly Drilling Co.'s No. 1 Murphy, Section 1-17-16, is shut down at 2,000 feet for rig repairs. Atlantic's No. 4 Ford, Section 3-17-16, is drilling at 910 feet. A short string of 4½ inch casing was cemented at 2,653 feet to test sand at 2,653-67 feet at Bailey and Trimble's No. 2 Le Croy, Section 17-16-15. Gladys Belle Oil Co.'s No. 5-A Cook, Section 16-16-15, is drilling at 2,300 feet. Grimes and Jones' No. 1 Prothro, Section 3-18-15, is drilling in salt water sand at 2,530 feet, and location was made for No. 8 Van Hook, SW cor. SW NW, Section 8-18-14. Six-inch casing was cemented at 2,369 feet at Gulf Co.'s No. 40 Hardy-Murphy, Section 3-16-15. No. 41 in Section 4-16-15 is drilling at 1,900 feet and location was made for No. 42 Hardy-Murphy, 1,820 feet north and 820 feet east SW cor. Section 3-16-15. Gulf Co.'s No. 3 Parker, Section 21-17-16, had sand at 2,111-31 feet and is waiting for a standard rig. Six-inch casing was cemented at 2,109 feet at No. 1 Patterson, Section 20-17-16.

Gulf Co.'s No. 4 L. Werner, Section 6-16-16, was dry at 2,269-72 feet with a show of oil and salt water. Location was made for No. 48 Werner, 4,950 feet north and 990 feet west SE cor. Section 6-16-16. H. M. Harrell's No. 7 Flenniken, Section 23-17-16, is drilling at 2,536 feet. Four and one-half inch casing was cemented at 2,727 feet at F. C. Henderson's No. 3 Smith, Section 18-16-15. Humble's No. 2 Goodwin, Section 20-17-16, is drilling at 245 feet, Humble Co.'s No. 5 Pate, Section 10-16-15, was recemented at 2,384 feet, H. L. Hunt's No. 8 Murphy, Section 4-17-16 is being bailed to test at 2,153 feet. Imperial Oil and Gas Co.'s No. 1 Goodwin, Section 26-17-16, is being reamed to set 6-inch casing at 2,966 feet. Six-inch casing was cemented at 2,084 feet at Imperial's No. 1 Parker, Section 21-17-16. Keene and Woolf's No. 5 Murphy, Section 9-16-15, tested dry with a show of gas at 2,611 feet. It is being swabbed to test nine feet of sand at 2,628-37 feet.

Waiting for Rigs

On the Lion Oil & Refining Co.'s Mitchell lease, Section 17-17-16, No. A-1 and No. A-10 are waiting for standard rigs; A-13 is drilling at 100 feet and A-17 is a rig. Magnolia Petroleum Co.'s No. 3 Childs, Section 8-16-16, is drilling at 2,400 feet. Magnolia Co.'s No. 3 Halsey, Section 20-17-16, is waiting for a standard rig at 2,152 feet; No. 4 is drilling at 550 feet and No. 5 is a rig. Arrangements are being made to test sand at 2,074-76 feet at Magnolia Co.'s No. 1 Murphy, Section 28-16-16. Magnolia Co.'s No. 2 Slaughter, Section 17-17-16, is drilling at 1,200 feet. Ohio Co.'s No. 11 Pate, Section 10-16-15, was plugged back from 2,689 to 2,649 feet, where the casing was perforated and a test is being made. Ohio Co.'s No. 1 Stocks, Section 21-17-16, is a rig.

Peer Oil Corp.'s No. 7 Cook, Section 17-16-15, tested 200 feet of oil at 2,653 feet and is to be deepened. A derrick is up for Pure Oil Co.'s No. 7 Bilyew, CWL, Section 8-16-15. The 4½-inch casing parted at Ramage's No. C-6 Lawton, Section 10-16-15, and the hole was plugged back to 2,000 feet. Arrangements are being made to whipstock, Reynolds and Marr's No. 2 Mooty, Section 22-17-16, drilling at 1,440 feet. Rovenger Oil Corp.'s No. 8 Dumas, Section 9-17-16, is waiting for a standard rig at 2,104 feet. Six-inch casing was cemented at 2,091 feet at Rovenger's No. 4 Graham, Section 16-17-16. Roxana Petroleum Corp.'s No. 3 Willett, Section 3-17-16, is drilling at 870 feet and a derrick is up for No. 4 CNL SW NW.

RATTLESNAKE AND TABLE MESA OPERATORS ARE MORE CONFIDENT

By Special Correspondent

FARMINGTON, N. Mex., Sept. 4.—More new production and the testing of wells in wildcat territory, and the resumption of drilling by some of the promising wildcat wells that have been delayed by fishing jobs are the features of the oil field this week. There seems to be a more confident spirit among the operators in the purely wildcat territory due partly to the fact that all the wells completed on the Rattlesnake and Table Mesa structures during July and August have been producers while two on the Red Mesa structure are believed to have commercial production although the latter is not fully proven. The R. M. Smith well in the Bloomfield district is holding up in production better than has any of its predecessors while heavy gas in the Congress well in the Kutz Canon district and showings of oil and gas in the Union Oil & Mining well in the Blanco district have all aided to create the optimistic feeling.

The Continental-Santa Fe companies, operating on the Rattlesnake structure 30 miles west of Farmington, Section 2-29-19, drilling on well No. 17, the deep test well, have reached a depth of 3,335 feet and are drilling in an 8-inch hole. Well No. 19, Section 3-29-19, has not yet been completed.

The Continental Oil Co., operating on the Table Mesa structure, 25 miles southwest of Farmington, Section 3-27-17, has completed well No. 8 and it is a small producer officially estimated as having a daily capacity of 50 bbls. of high gravity oil the same as is found in other wells on the Navajo reservation. In well No. 10, drilling is in progress and they have reached a depth of 625 feet at which point casing will be run.

The Congress Oil Co., operating in the Kutz Canon district on Garland Permit No. 1, Section 34-29-11, has recovered the lost tools and is again drilling. The Midwest Refining Co. sent one of its best drillers from Denver here, Frank Webber, and in three days after he took charge of the work he had the lost tools out. Mr. Webber, it is reported, believes the well has an excellent chance to come in a producer and will remain here for a few days until it is demonstrated what the well will do. Mr. Webber will remain indefinitely if the well proves to be a commercial failure. He was in charge of the drilling of most of the Midwest Refining Co.'s well on Hogback Dome here. Drilling was resumed in the Congress at 1,665 feet.

The Portage Oil & Gas Syndicate, operating on the Glade structure 6 miles northeast of Farmington, Section 24-30-13, after unsuccessful efforts to remove two frozen joints of casing in the bottom of the hole has decided to drill past it and is now engaged in that work. C. J. Hubbell, the manager, believes he will be able to accomplish this and is confident he will bring in a producer despite the unexpected amount of trouble and delay he has encountered.

It is announced that the Ross-Bloomfield Royalty Co. will resume drilling in its well in the Bloomfield district, Section 11-29-11. Doctor Ross, who has had charge of operations, has expressed doubt as to having encountered the Picture Cliff sand in the former drilling as was announced when work was suspended a couple of weeks ago. At least further drilling has brought it in touch with a sand that shows signs of being oil bearing. Another error has been given publicity in connection with this well and that is that it is the first to test the Picture Cliff sand in the San Juan Basin. The old Farmington well which was drilled to a depth of over 2,700 feet, passed through the Picture Cliff and got a very heavy flow of gas in it. The E. T. Williams well, southwest of Aztec, also passed through it.

The Southwestern Development Co., operating on the Atteberry place, 6 miles north of Aztec, Section 24-31-11, is drilling at about 1,000 feet depth and moving cautiously as production from the shallow sands is expected at most any time. It is rat-tailing ahead so that a water shutout may be effected if oil is encountered, as is hoped.

Simms Oil Co.'s No. 1 Murphy, Section 34-16-16, is drilling at 671 feet. Southern Crude Oil Purchasing Co.'s No. 10 Graves, Section 3-16-15, is drilling at 2,040 feet. A derrick is up for Southern's No. B-5, Slaughter, CNW SW, Section 3-17-16. Southern's No. A-5 Wells, Section 15 16-15, is drilling at 1,380 feet.

Standard Oil Co.'s No. 4 Reynolds, Section 6-18 15, is drilling in sandy shale at 2,176 feet with standard tools. Sun Oil Co.'s No. 9 Brown, Section 8-18-15, is being reamed to the bottom at 3,675 feet. The 4½-inch casing set at 2,494 feet was pulled and Sunny Jim Oil Co.'s No. 3 Flenniken, Section 9-16-15, is being plugged back to 2,484 feet. The Texas Company's No. 8 Calloway, Section 4-16-15, is drilling at 764 feet and No. 8 Hays, same section, is drilling at 2,092 feet. After a belated start, Unity Petroleum Co. has entered the Lisbon Field after some of Arkansas' high gravity oil. No. 1 Snydor, NW cor. NW SE, Section 21-17-16, is a derrick pattern; No. 2 NE cor. NW SE, is a derrick pattern: No. 3, NW cor. NE SE, is a derrick and No. 4, NE cor. NE SE, is a derrick pattern.

Ouachita County

The Smackover Field on the Ouachita County side fared much better than the Union County side. Standard Oil Co.'s No. B-8 Bennett, Section 32-15-15, was completed at 2,587 feet pumping 365 bbls of oil. Simms Oil Co.'s No. 10 Laney, Section 31-15-15, was finished at 2,585 feet flowing 50 bbls. through 2-inch tubing. A. Meek's No. 2 Clawson, Section 35 15-17, is making 60 bbls. on the swab at 2,312 feet.

Six inch casing was cemented at 2,165 feet at W. H. Copenhaven's No. 2 Berg, Section 13-15-17. Location was staked for Gulf Co.'s No. 12 Goodwin, 300 feet north and 1,070 feet east SW cor., Section 32-15-15. Gulf Co.'s No. A-20 Umsted, Section 33-15-15, is drilling at 2,930 feet; A-21 is waiting for casing to set at 2,354 feet and A-22 is a derrick. Six inch casing was cemented at 2,591 feet at Humble Oil & Refining Co.'s No. 10 Hilderbrant, Section 28-15-15. Eight and one-quarter-inch casing was cemented at 1,987 feet, steel line measurement, at W. R. Keever's No. 2 Neeley, Section 27-15-16. A derrick is up for A. Meek's No. 3 Clawson, 660 feet south and west NE cor., Section 35-15-17. Phillips Petroleum Co.'s No. 1 Tate, Section 9-14-17 is being underreamed to 3,132 feet. J. D. Reynolds' No. 3 Ratch and Cartier, Section 2-14-18 tested salt water at 1,579 feet and is to be deepened.

Roxana Petroleum Corp.'s No. 7 Berg, Section 28-15-15, is drilling at 1,875 feet. Standard Oil Co.'s No. B-11 Murphy, Section 28-15 15, is drilling in hard sand at 2,384 feet. Sun Oil Co.'s No. 2 Hardin, Section 22-15-16, is drilling at 2,170 feet. Sure Oil Co.'s No. 4 Snyder, Section 34-15-15, is drilling at 2,050 feet. Six-inch casing was cemented at 1,981 feet at the Texas Company's No. 8 Neeley, Section 27-15-16. Arrangements are being made to deepen Vandiver and associates' No. 1 Yarbrough, Section 22-14-17, formerly reported abandoned at 1,641 feet. Six-inch casing was cemented at 2,639 feet at Woodley Petroleum Co.'s No. 5 Richardson, Section 28-15-15.

In the Stephens district Louisiana Oil Refining Co.'s No. 1 Holton, Section 15-15-19, blew in making 15,000,000 feet of gas from 1,554 feet and was shut in and is waiting for orders. Six-inch casing was cemented at 2,110 feet at Magnolia Co.'s No. 5 Watson, Section 31-15 19. Ohio Oil Co.'s No. 1 J. M. Curry, Section 32-15-19, had sand at 2,108-18 feet and is waiting for a standard rig.

Columbia County

Gorden and associates' No. 6 Jones, Section 1-16-20, was completed in sand at 2,218-33 feet and made 6 bbls. on the pump. Haynesville Trust Co.'s No. 1 Wingfield, Section 18-19-19, was dry and abandoned at 2,370 feet. Gorden and associates' No. 7 Jones, Section 1-16-20, is waiting for six-inch casing to set at 2,226 feet.

Nevada County

Autrey Oil Co.'s No. 1 McKinney, Section 9-14-21, is drilling at 150 feet. The drill stem struck at 2,714 feet at Humble Co.'s No. 4 Bodeau, Section 9-15-22. Southern Crude Oil Purchasing Co.'s No. 1 Waters, Section 2-14 21, is drilling at 900 feet in shale. Zing and associates' No. 1 Moss, Section 12-14-21, topped the sand at 1,139 feet and cemented casing there.

HAYNESVILLE AND UNION COUNTY DEEP-ZONE WILDCATS PROMISING

By James H. Dameron

EL DORADO, Ark., Sept. 9.—The old Lawson area in Union County, Arkansas, and the Haynesville Field in Louisiana vied with the other during the week in wildcat excitement with both showing promise in the deep zones.

Simms Oil Co. and Sun Oil Co.'s No. 1 Simmons, Section 9-18-13, started the fireworks last week when it blew in at 2,650 feet making 30,000,000 feet of gas and 20,000 bbls. of salt water. The water is believed to have been coming from salt water sand cored at 2,503-17 feet. Smackover was discoverd in a similar manner and operators jumped in and started grabbing acreage in the Lawson area at Texas prices. The well was closed in and a new derrick built and arrangemtns are being made to take a core.

Just as the flame of that excitement was dying down Walber and associates' No. 2 Cordell, Section 6-19-13, drilled the plug and started bailing to test at 2,967-81 feet. The hole has about 2,000 feet of fluid in it estimated to be between 50 and 60 per cent salt water. The oil tested 29.5 corrected gravity. It first tested 31 at 84.

Haynesville is now bidding for the spotlight with a possibility of production from the Trinity horizon. It is being bailed to test 17 feet of broken formation at 4,513-30 feet. The hole has 2,600 feet of fluid in it, 1,200 feet of oil and 1,400 fet of salt water. The oil is 34.5 gravity crude.

One other Union County, Arkansas, test, near Kinard, went off the boards when it was dry in the Nacatoch sand. Two other Arkansas wildcats that had been temporarily abandoned several months ago were abandoned. Three wildcats in Louisiana were recorded as failures during the week.

Union County

A. H. Stoltz' No. 1 Wait, Section 4-18-16, 2 miles northwest of Kinard, was dry at 2,235 feet and was abandoned with the casing in the hole. Bonderant and associates' No. 1 Garner, Section 8-18-12, is shut down at 2,180 feet waiting for a drill stem. Matthews and associates' No. 1 Lewis, Section 14-19-12, cored salt water sand at 2,613 feet and is drilling ahead in sand and boulders at 2,628 feet. Wingfield and associates' No. 1 McGough, Section 22-17-13, is shut down at 1,000 feet for boiler repairs.

Ashley County

Rhodes & Kirker's No. 1 Bledsoe, Section 20-15-7, is drilling at 2,795 feet.

Bradley County

Magnolia Petroleum Co.'s No. 1 Arkansas Timber, Section 33-15-11, is drilling in sandy shale at 2,475 feet. Mc-

(Continued on Page 141)

SKELLY WELL, WEST OF MALJAMAR, GETS VERY ENCOURAGING SHOWING

By Special Correspondent

ARTESIA, N. Mex., Sept. 3.—The Skelly Oil Co.'s No. 1, on the Beulah Lynch Permit, Section 22-17-31, 5 miles west of the Maljamar, has drilled through a hundred feet of sandy lime, topped at 3,240 feet, which is good for 40 bbls. While this is classed merely as a showing, coming from the same pay horizon encountered in the Maljamar at 3,600 feet, it is very encouraging and, from all indications, this well will be as good, if not better, than the Maljamar wildcat. The 8¼-inch casing has been underreamed and carried to 2,665 feet, with the 500,000 feet of gas bradenheaded. From a comparison of the Maljamar and Skelly logs the big pay in the latter should be topped at 3,710 feet.

Of considerable importance to the Maljamar Pool are the gas showings obtained in the Bruce Sullivan No. 1 in the SE of Section 1-18-31, the first at 1,455 feet and the second at 1,630 feet. Both of these showings came from a lime streak in the salt.

Two more tests will be started during the coming week, rigs being erected by Henderson-Dexter-Blair in the SW of Section 34-17-33 and the Maljamar, which is offsetting its No. 1 producer 700 feet to the north on state land. This latter test is in the SE of Section 16-17-32. In Section 18-17-32 the Ohio Oil Co. has its No. 1 on the William Mitchell permit down 300 feet. On the cap rock the Inglefield No. 1, Section 4-17-34 is drilling at 1,250 feet.

It is reported the Prairie Oil & Gas Co. will make a location in the NE of Section 34-18-32, but this has not been confirmed. Drilling has been resumed on the Wooley-Jones No. 1 Beeson in Section 33-17-30, at a depth of 3,078 feet.

In the Artesia Field, Snowden-McSweeney have a 35-bbl. producer in their No. 2 in Section 33-18-28, this coming from the lower sand. When completed this well appeared to be the best completion in the Artesia Pool, flowing naturally for better than 150 bbls. A shot put it back in the pumper class.

South of this well the No. 1 of Henderson-Dexter-Blair is drilling at 2,000 feet, with the log checking closely with the field's producers.

In Section 5-17-28 the Decum Development Co.'s No. 1 Vandagriff will be shot during the coming week. Considerable oil is coming from the hole from a sandy lime encountered from 2,350 to 2,395 feet with the bottom of the hole 2,458 feet. Casing has been set and the hole bailed of the 2,000 feet of salt water.

Three new locations in West Texas, close to the New Mexico line will be drilled immediately. One of these tests will be drilled by Carter & Zwifel of Fort Worth and is located in Block A-52, Section 18, Andrews County. Llano Oil Co. is moving tools to its location in the center of Section 1, Block C-22 Winkler County and R. S. Matthews has closed a contract with Hofmeir & Healy

(Continued on Page 120)

LOUISIANA COMPLETIONS

La Salle Parish

The Urania field closed the week with 10 new producers, making 650 bbls. in the aggregate. The best completion was in the southern end of the field when Louisiana Oil Refining Corp.'s No. C-3 Tremont, Section 2-9-1e, came in flowing 250 bbls., 4 per cent salt water, from sand at 1,499-504 feet. Trailing it was Beckman and Freeman's No. B-6 Urania, Section 7-10-2e, in the north end which was completed at 1,508 12 feet, making 100 bbls. natural. H. L. Hunt's No. 2 Griswold, Section 2-9-1e, is flowing 80 bbls. natural. H. L. Hunt's No. 2 Griswold, Section 2-9-1e, is flowing 80 bbls., 5 per cent salt water from sand at 1,495-97 feet. Louisiana's A-10 Tremont, Section 35-10-1e, is making 15 bbls. on the pump from sand at 1,546 49 feet.

Louisiana Co.'s B-21 Tremont, Section 30-10-2e, is flowing 25 bbls. from sand at 1,534-38 feet. Little River Oil Co.'s No. 1 Ratcliff, Section 26-10-1e, is making 15 bbls. on the pump from sand at 1,555-59 feet. Natural Gas & Fuel Corp.'s No. A-3 Russell, Section 26-10 1e, is pumping 20 bbls. of fluid, 80 per cent salt water, from sand at 1,546 53 feet. Its No. 3 Frank Tullos, Section 26-10-1e, was good for 25 bbls. naturally from sand at 1,527-33 feet and No. M-3 Urania, Section 20-10-2e, is flowing 60 bbls. of fluid, 30 per cent salt water from sand at 1,530-42 feet. On the Winn Parish side of the field O. W. Clark's No. 7 Harper, Section 26 10-1e, is flowing 60 bbls. from sand at 1,483-91 feet.

Beckman and Freeman's No. B-7 Urania, Section 7-10-2e, topped the sand at 1,531 feet and 6-inch casing was cemented at 1,524 feet. No. B-8 is drilling at 200 feet. Finn and House's No. 2 Smith, Section 26-10-1e, is being bailed to test at 1,546-50 feet. N. C. Hudson's No. 1 Urania, Section 6-10-2e, is drilling at 1,120 feet. H. L. Hunt's No. 3 Griswold, Section 2-9-1e, is standing with a hole full of fluid from sand at 1,509-12 feet and is waiting for a standard rig; No. 4 is a rig. Sand was topped at 1,505 feet at Keene and Woolf's No. 1 Griswold, Section 3-9-1e and six-inch casing was cemented at 1,350 feet. A derrick is up for Louisiana Co.'s No. C-7 Urania, 200 feet north and east SW cor. SE NW, Section 26-10-1e. McGahan and associates' No. 1 Urania, Section 5-10-2e, is shut down at 1,440 feet for rig repairs. Montague Oil Co.'s No. 3 Zenoria, Section 11-9-1e, is waiting on a liner and had sand at 1,501-03 feet. Six-inch casing was cemented at 1,535 feet at Natural Gas and Fuel Corp.'s No. A-4 Russell, Section 26-10-1e, and A-5, 200 feet north and east SW cor. SE SE, Section 26-10-1e, is a derrick pattern. Natural's No. M-4, Section 19-10-2e, had sand at 1,586 90 feet and is waiting for a standard rig; No. M-6 Urania, NW cor. NW SW and M-5 SE cor. NW SW, both in Section 20-10-2e, are derricks.

Six-inch casing was cemented at 1,506 feet at Rochelle Oil Co.'s No. 1 Tremont, Section 30-10-2e. Shreveport Oil Corp.'s No. 1 Pendarvis, Section 26-10-1e, is drilling at 1,400 feet, and a derrick is up for No. 1 Morrow, 710 feet north. Taylor, trustee, No. 14 Urania, NE SE SW, Section 19-10-2e, is drilling at 100 feet. C. S. Thomas' No. 1 Urania, Section 18-10-2e, is sand at 1,527-30 feet, waiting for a standard rig. Sand at 1,495-99 feet is being bailed at Wetherbee and associates' No. 3 Urania, Section 2-9-1e; No. 5 is drilling at 400 feet. Yeary and Bristol's No. 4 Urania, Section 8-10-2e, topped sand at 1,527 feet and casing was cemented at 1,520 feet. On the Winn Parish side of the field Allen and associates' No. 1 Allen, Section 23-10-1e, is waiting for casing to set at 1,491 feet. A rig is up for O. W. Clark's No. 9 Harper, 400 feet south and 200 feet east NW cor. SE SW, Section 23-10-1e, and No. 10 Harper, 650 feet south and 300 feet west NE cor. NE NW, Section 26-10-1e, is a derrick. Location was made for F. A. Shannon's No. 1 Albritton, 150 feet south and east center Section 27-10-1e.

Caddo Parish

One of the Trinity tests in Caddo was junked around 5,000 feet when Gulf Refining Co.'s No. E-1 Muslow, Section 35-21-15, was junked at 4,963 feet in red and blue shale where the drill stem stuck. On the Gulf's Ferry Lake lease in Section 15-20-16, Gulf's No. 247 was completed at 2,275 feet for a 80-bbl. pumper.

Double I. I. Oil Co.'s No. 8 Spell, Section 15-21-15, is shut down at 1,735 feet waiting for a standard rig. Dixie Oil Co.'s No. 17 Muslow, Section 7-20-15, is reaming to set casing on top of oil sand at 2,257 feet and No. 10 Slattery, Section 27-21-15, is shut down at 1,330 feet for rig repairs. On the Gulf's Ferry Lake lease No. 248 is drilling in shale

(Continued on Page 145)

Crude Oil Transportation

Pictures and articles describing every phase of this vitally important branch of the petroleum industry, together with a 16-page map showing all trunk oil pipelines in the United States, brought up to date from individual maps of the different pipeline companies, will constitute a big insert in the October 7 issue of The Oil and Gas Journal.

This subject will be covered in the most comprehensive manner ever attempted before by any publication, government bureau, or organization. Through the active co-operation of the pipeline companies, The Oil and Gas Journal is able to present in highly illustrated form the story of the pipeline industry and show in detail the vast work involved from the time the question of building a pipeline is first considered until crude oil is delivered at the refineries.

This insert is intended as a handbook of crude oil transportation and will be kept as a reference by every person interested in the transportation of crude oil. It will be "The Oil Industry's Answer" of the pipeline industry as it will contain all data showing the work involved and the great amount of material required in the construction of a line and the vital service rendered both to the petroleum industry and the public by the pipelines.

In line with its established policy, The Oil and Gas Journal will make no extra charge for this issue and only the required number of copies will be printed. We realize there will be an unusually large demand for this number but our policy of first taking care of our regular subscribers will be adhered to.

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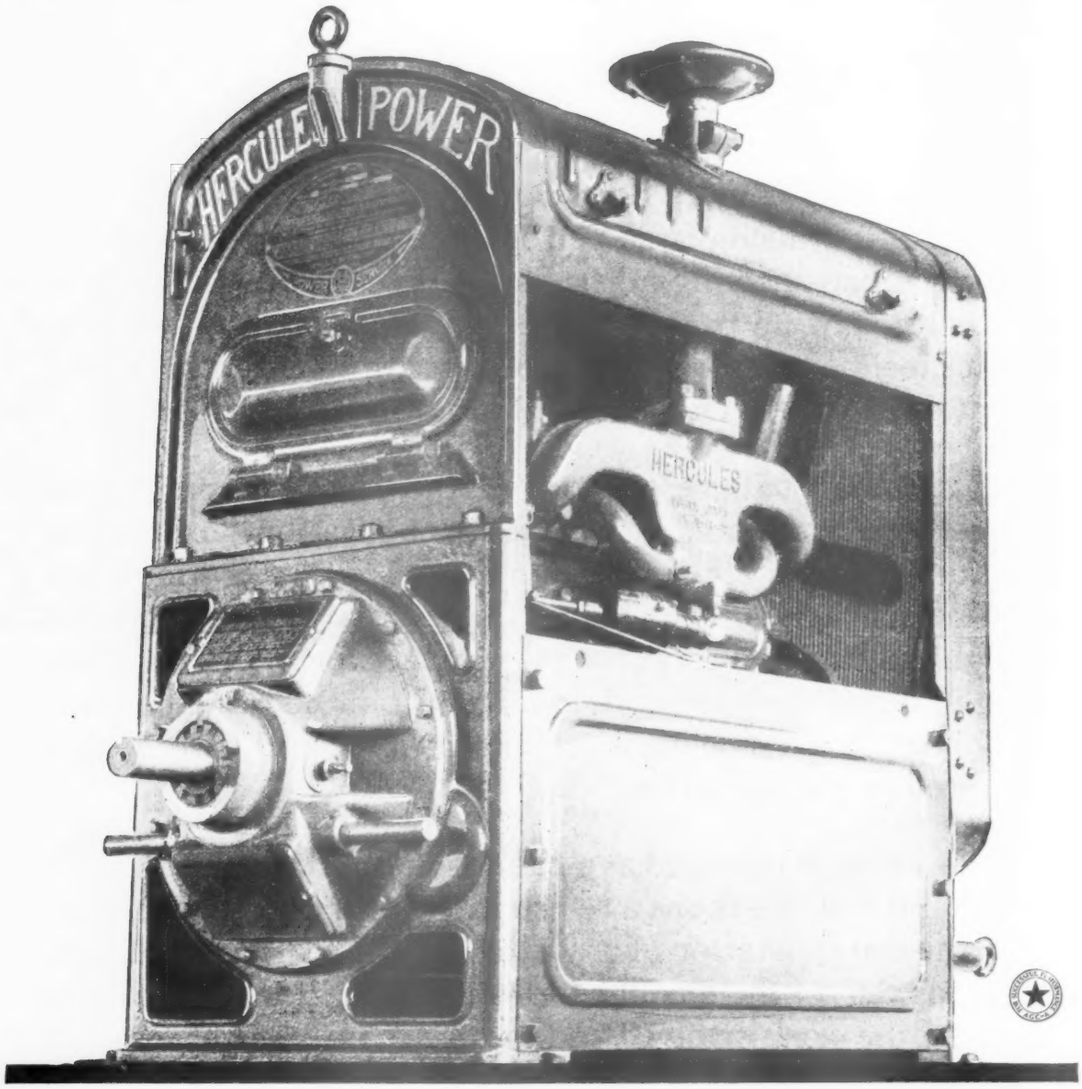

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Lockport, La., Has 8,000-Barrel Well

Big Producer in Coastal Area Pinched Down to 2,500 Bbls. Pierce Junction and Sour Lake Take Added Importance

By P. L. McGreal
Staff Correspondent Gulf Coast Fields

HOUSTON, Tex., Sept. 6.—A total of 28,410 bbls. new production developed in the Gulf Coast pools during the week ending Saturday brought the estimated daily average gross output up to 199,175 bbls. Wells completed number 24, of which 13 were dry. Eleven holes are bailing at the close of the week.

The deep sands at Spindletop account for seven of the total completions and 20,200 bbls. of the gross new production. Three wells were abandoned in rock salt there. The daily average for the week there is 103,155 bbls., an increase of 26,405 bbls. over the estimate for the previous 7-day period.

The Lockport (La.) and the Sour Lake Pools each contributed to the production column and helped swell the total to the highest it has been since the boom days at West Columbia in 1918, 1919 and 1920.

The following table briefly shows the results of the week's operations.

Dist.—	Comp.	Prod.	Dry.	SW.	Blg.
Boling	1	300	0	0	0
Batson	2	0	2	0	1
Goose Creek	2	250	1	0	3
Hull	3	660	0	0	0
Lockport	1	4,000	0	0	0
Orange	0	0	0	0	2
Pierce Junc.	0	0	0	0	2
Spindletop	7	20,200	3	0	3
Sour Lake	2	3,000	1	0	0
Miscellaneous	6	0	6	0	0
Total for week	24	28,410	13	0	11

Estimated Average Gross Production

The estimated daily average gross production in the Coastal pools shows an increase of 31,465 bbls. over last week. Spindletop increased 25,405 bbls.; Lockport, 2,750 bbls.; Nash Dome, 900 bbls.; Hull, 900 bbls.; Sour Lake, 800 bbls.; Boling, 150 bbls.; Orange, 875 bbls., and Vinton, 175 bbls. The West Columbia Pool decreased 245 bbls.; Goose Creek, 410 bbls., and Pierce Junction, 100 bbls.

The pools in South Texas are credited with a total of 183,405 bbls. and those in South Louisiana with 15,770 bbls. of the gross output during the week.

The estimate for each pool is as follows:

District—	Gross Bbls.
Boling	2,650
Batson	1,500
Blue Ridge	1,325
Barber Hill	670
Big Creek	2,000
Dayton	260
Damon Mound	755
Edgerly (La.)	840
Goose Creek	10,240
Humble	4,600
Hull	18,900
High Island	165
Jennings (La.)	1,225
Lockport (La.)	7,050
Markham	225
Nash	1,700
Orange	8,975
Orchard	80
Pierce Junction	3,300
Piedras Pintas	130
Spindletop	103,155
Saratoga	1,470
Sour Lake	8,150
South Liberty	4,300
Vinton (La.)	6,575
Welsh—Anse La Bute (La.)	80
West Columbia	8,755
*Miscellaneous	100
Total	199,175

*Includes Nacogdoches, Kleberg and Washington Counties.

Southwest Fields

The gross production for the Southwest Fields is estimated at 46,360 bbls. for the week of September 4, an increase of 410 bbls. over the previous 7-day period. Luling increased 130 bbls. and the Mirando districts 300 bbls. The Humble Pipe Line Co. has started running crude from the Mirando Pools to Encleside, the terminus of its new 8-inch line on the bay near Corpus Christi. The oil will be moved from there to Baytown refinery and Texas City terminals in tankers.

The estimate for each field is as follows:

Field—	Gross Bbls.
Luling	21,800
Mirando	17,600
Somerset	2,010
Calliham	95
Rockdale-Minerva	925
Lockhart, (Lytton Springs)	3,930
Total	46,360
Grand total for week	245,535
Grand total last week	213,660
Net increase	31,875

Mirando includes Webb, Jim Hogg, Zapata and part of Duval County.

Lockport Sensation

The Lockport (La.) Pool furnished the sensation of the week, outside of the Spindletop excitement. The Vacuum-Gulf Co.'s joint No. 3 Bordages there started off at 8,000 bbls. from 3,750 feet, 24.8 gravity oil. It was pinched down to 4,000 bbls. and later to 2,500 bbls. It is 300 feet west of production and is the largest well to date in that section, which is near Lake Charles, Calcasieu Parish. The Vacuum Oil and Gulf Refining Co. hold all the available acreage and are doing the development work jointly, the Vacuum Oil Co. having charge. The well jumped the average for the week to 7,050 bbls.

The pool was opened in September, 1924, when No. 1 Miller was brought in flowing 3,000 bbls. at 3,875 feet, 23.5 gravity. The territory is marshy and is 10 miles from Edgerly and 20 miles from the Vinton Pool. It is an expensive region in which to operate, as the derricks are on piling, with plank roads through the swamp in which the water is from 2 to 5 feet deep. The operating companies have drained much of the swamp land.

It is also a region of deep wells. The deepest test in the history of the Coastal country was drilled last year and abandoned at 6,110 feet.

Same interests' No. 9 Miller is fishing and No. 10 Miller is drilling at 5,315 feet. No. 4 Lock-More is around 5,810 feet. No. 1 Farquhar is at 3,465 feet and No. 1 Bayou d' Inde is at 2,455 feet with a location made for No. 2.

The crude is removed in small tankers which navigate the inland waters from the Gulf of Mexico and also in tank cars. It is shipped to the Vacuum Oil Co.'s storage tanks at Texas City.

Sour Lake and Pierce Junction

The deep sand light oil section on the southwest side of the Sour Lake Pool and the northwest side of the dome at Pierce Junction rank next in importance to Spindletop. The Bashara Oil Co.'s No. 1 fee, in the deep sand section at Sour Lake, which came in early in the week flowing 3,000 bbls., later increased to 3,400 bbls. The Humphrey Oil Corporation has three wells there and has made locations for No. 1-E and No. 1-D Bashara. The Sun Co. abandoned No. 1 Libbie at 4,950 feet. Humphrey's No. 2-B Bashara is drilling below 2,300 feet and No. 3 is around 1,345 feet. A location was made for No. 4 Bashara.

The Yount Lee Oil Co.'s No. 5 Gilbert is at 4,145 feet. No. 2 Lynn is drilling below 4,070 feet. The Gulf Production Co.'s No. 1-D McLean is at 3,980 feet. Its No. 1 Jackson is drilling around 785 feet. No. 2 Jackson is rigging and a derrick is up for No. 3 Jackson. Gordon et al's No. 1 Schaffers is drilling around 4,200 fet. The Eunice Oil Co.'s No. 1 Eunice is fishing at 3,670 feet. The Orange Petroleum Co. has a location for No. 2 Merchant. On the north side, the Humble Oil & Refining Co. is working over No. 34 Hardin. The Lake View Oil Co. is rigging No. 50 Hardin.

On the northwest flank of the Pierce Junction Dome, the Rio Bravo Oil Co.'s No. 3-P Settegast is bailing at 3,650 feet and No. 3 P. F. Settegast is also bailing at 3,850 feet. Nos. 4 and 5 P. F. Settegast are rigging. The Gulf Production Co.'s No. 1-A Jones is drilling at 965 feet and No. 1 Jones is rigging. The Marland Oil Co.'s No. 1 Prudential is drilling around 1,015 feet. J. F. Bashara's No. 2 Bender is at 1,765 feet with No. 3 Bender rigging. The Texas Exploration Co.'s No. 10 Dooley is drilling about 2,900 feet. On the east side of the dome, the Gulf Production Co.'s No. 19 Taylor is drilling around 3,375 feet. The Navarro Oil Co.'s No. 3 Cain is at 3,910 feet and No. 1 Humble-Dooley is at 655 feet. H. R. Cullen's No. 7 Howe is fishing at 4,040 feet.

Goose Creek and Humble

In the Goose Creek Pool, the Gulf Production Co.'s No. 34 Beaumont will pump at 3,450 feet. Its No. 7 Wright was abandoned and No. 6 Hirsch is bailing at 4,500 feet. The Humble Oil & Refining Co.'s No. 60 Smith is bailing at 5,050 feet, as is the Gulf Coast Oil Corp.'s No. 9 Galliard, a work over, at 2,775 feet.

The Gulf Co. is drilling No. 10 State land at 2,545 feet. On Galliard peninsula, the Humble Oil & Refining Co.'s No. 9 is a location, No. 10 is drilling around 3,105 feet, No. 12 below 3,600 feet, No. 17 is a derrick, No. 26 is below 2,475 feet and No. 31 is drilling around 1,000 feet. The M. & B. Oil Co. has made a location for No. 5 Scorgea, northwest of production.

In the Humble Pool, J. A. Deering has started No. 3 Bissonett on the northwest side. Woods and Bennett's No. 1 Horn is drilling. Cezeraux and Martin's Nos. 2 and 3 Harrell are drilling with locations for Nos. 4 and 5.

Liberty County Pools

In the Hull Pool, The Texas Company's No. 1 Hannah fee is pumping 360 bbls. at 2,960 feet. The Gulf Production Co.'s No. 72 Phoenix is making 250 bbls. at 2,100 fet. The Republic Production-Houston Oil Co.'s No. 135 Dolbear is pumping 50 bbls. at 2,700 feet.

The Republic Production Co.-Houston Oil Co.'s No. 126 Dolbear on the east side of the dome, is drilling around 2,300 feet, No. 136 Dolbear is at 2,080 feet, No. 137 at 2,785 feet and No. 138 at 2,080 feet. To the southeast, the Gulf Production Co.'s No. 5 Phoenix is deepening at 2,435 feet and No.'s 73 and 74 are rigging. On the south side, the Humble Oil & Refining Co.'s No. 1 Lynd is pulling liner at 4,300 feet and has a location made for No. 2 Lynd. To the southwest, the Empire Gas & Fuel Co.'s No. 20 Barngrover is at 3,233 feet and No. 21 is working over. The Texas-Vacuum Oil Co.'s No. 6 Hannah is working over. The Gulf Co.'s No. 18 Hannah is at 1,545 feet. On the west, the Hull Oil Co.'s No. 4 Harrison is at 3,098 feet and No. 11 Abel is at 1,675 feet. The Humble Co. has a location for No. 5 Merchant. On the north side of the hill, the Gulf Co,'s No. 18 Scarborough is drilling at 3,945 feet.

In the west extension of the South Liberty Pool across the Trinity River, the Humble Oil & Refining Co.'s No.

(Continued on Page 140)

SPINDLETOP INCREASES 25,000 BBLS.; DEEP SAND OUTPUT OVER 103,000

By P. L. McGreal

BEAUMONT, Tex., Sept. 6.—The deep sand area on the west side of the old cap rock section of the Spindletop Pool is proving to be one of the wonder spots so characteristic of Gulf Coastal Plains region. The famous Stevenson tract on the east side of the cap rock in the Humble Pool and the Japhet 20 acres on the same side at West Columbia are examples of prolific spots. Millions of barrels have been taken from beneath the limited acreage at both places and now Spindletop bids fair to rival even these spots.

Proving the existence of these prolific spots and then developing them is what makes the Coastal country alluring to those who are familiar with conditions and are not afraid to play the game—for it costs money and lots of it to find and develop such places. However, if the hazard is great, the reward is great in proportion, once the spot is found. The deep sand at Spindletop is proving the truth of this statement.

Money is being poured out like water on approximately 20 acres of ground, divided into 1, 2 and 5-acre pieces and on which eight companies have found production to date, with some 10 more drilling. However, some of these are apparently outside the favored zone, trying to extend the limits of the present productive area.

During the week seven wells were completed, three of these being abandoned in rock salt, indicating they were too close to the dome. The four remaining producers yielded 20,200 bbls. initial flow. Three more are now bailing. The feature of the week is the Unity Oil Co.'s No. 89 McFaddin, completed at 2,750 feet with initial flow of 3,000 bbls., 25 gravity oil. It is located east of the Texas and New Orleans Railroad right-of-way on the north and east side of the dome, about two locations from production. While it does not spell much of an extension it inspires hope for more production in that direction. The Magnolia Petroleum Co. is rigging No. 1 Fee, on its tank farm about three locations south of production.

Completions of Week

Early in the week the Yount Lee Oil Co., discoverers of the deep sands on the west and southeast sides of the cap rock section, brought in No. 9 McFaddin flowing 4,200 bbls. No. 10 McFaddin followed, flowing 5,000 bbls. Same company's No. 4 fee made 4,500 bbls. initial and No. 6 fee staged a gas blow out. The Turnbow Oil Co.'s No. 1 Banks on the west side of the development, came in flowing 1,000 bbls. initial output. All the wells are pinched in. The Gulf Production Co.'s No. 3 Oakwood came in making 2,500 bbls.

Lord and Mothner abandoned No. 1 Davis in salt at 2,190 feet and the L and L Oil Co. did the same. Wilson and Broach quit No. 1 Weed at 2,700 feet. Porch and Trembly shut down No. 5 Trembly.

The Gulf Production Co.'s No. 3 Mann is bailing, as is the Atlantic Oil Producing Co.'s No. 3 McLean at 3,200 feet and Paggi & Co.'s No. 3 Gordon at 3,260 feet. The Deutser Oil Co. deepened No.

(Continued on Page 120)

May Lift Seal Beach Restrictions

Operators and Citizens' Agreement to Permit Drilling in Alamitos Heights Area, Adjoining Marland's Holdings

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Sept. 4.—Aside from the drilling being done in the southwest extension at Huntington Beach, the principal development in California during the past week was the recommendation of an operators' and citizens' committee to lift drilling restrictions in the Alamitos Heights area which adjoins the Marland's holdings at Seal Beach. The recommendations made to the Long Beach City Council, which has jurisdiction over this area and the greater part of the Seal Beach Field due to its lying within the corporate limits of Long Beach, were the result of a meeting between representatives of several oil companies and a citizens' committee, part of which has vehemently protested development in that area. Under the terms of the compromise reached by the two factions, drilling will be permitted as far south and west as Recreation Park. If this plan is adopted, the exclusive Belmont Heights district and other residential property will be protected, in as much as the municipal park will lie between this area and the Seal Beach Field.

While it is not absolutely certain that the City Council will adopt this resolution, which will open up part of Alamitos Heights for development, it is quite probable it will meet with favor because of the attitude of property holders involved.

The Marland has already started throwing up dikes and levees to protect Recreation Park and other property from possible damage by oil wastes and it is understood the city engineers are working on a plan along this line which will cover the entire area and be compulsory before any drilling is undertaken in Alamitos Heights if opened up for work. Although the productive limits of the Seal Beach Field are unknown and therefore a matter of conjecture, geologists are universally of the opinion that the district will be long and narrow with the Marland's discovery well located southeast of the apex of the structure.

Particular attention is directed to this condition because it makes the Alamitos Heights section ,which lies northwest of the discovery, look rather promising and almost sure to come in for some play before the close of the current year and possibly within 30 days, if favorable legislation is enacted. Most of the lots in this town lot area have been leased up for some time in anticipation of some favorable action which would permit work and, as the situation stands, the Seal Beach district will probably not have the distinction of being one of the few fields opened up in southern California which did not have a town lot condition to contend with. A check of present work shows that both the Marland and Standard should be in a position shortly to start actual drilling as the former has a rig completed for No. 1 Selover and pile foundations are in for four more, while the latter has material on ground for two rigs on the San Gabriel lease.

Huntington Beach

Operators in the southwest extension of the Huntington Beach Field are setting a fast pace so far as drilling is concerned and the coming week will probably see at least two more wells completed. George F. Getty is drilling his No. 4 Huntington into the pay, while the Standard is expected to drill in Nos. 1, 2, 3 and 4 on the Huntington property within a few days, as all are standing cemented just above the oil sand. The Superior, E. J. Miley and the Wilshire should also tap the producing horizon within a short time, as the wells have but a short distance to go.

Aside from the Wilshire's No. 1 Huntington, which is being carried down in search of a lower sand, the McKeon Oil Co.'s No. 1 Huntington is perhaps one of the most interesting wells being drilled in the field, although Miley's No. 2 Pacific Electric, which is somewhat deeper than No. 1, the producer, and has not yet hit a sufficiently saturated sand to warrant a test, is being watched very closely as it may change the outlook entirely. The McKeon undertook to determine the depth of the existing sand and at 3,385 feet has passed through approximately 200 feet of formation carrying oil and gas. It will be interesting to watch the outcome, if a test is made, in as much as the Wilshire was unable to effect a water shutoff in its No. 1 Huntington, which, following this difficulty, was turned into a deep test. While on the subject of deep tests, it might not be amiss to call attention to existing conditions in the extension. In the Huntington Beach Field proper there are three producing horizons, the upper being the Bolsa and the lower the Surf, with the Ashton lying between.

The sand productive in the southwest extension at 3,100 feet has not been definitely identified but it is believed to be comparable to the Bolsa zone in the older sections of the field. This sand was not found to be commercially productive on the Standard's lease "B" just north of the town lot section, the company having found it more advantageous to produce from the 4,000-foot level. Due to the limited amount of development done to date it is rather difficult to correlate the various zones in the southwestern part of the district, but it appears the Standard is producing from the Ashton zone on its lease "B" while the three wells finished in the southwest extension to date are drawing on the upper or Bolsa zone.

Expect Deep Sand

It seems logical to assume that a deep sand, in this case the Ashton, will eventually be found in the southwest extension, partially because the Bolsa sand in this area was productive, while the Standard failed to secure production from the same sand on its Lease "B" to the north. As a rule deeper horizons are larger in area than upper sands and, if this holds true, operators in the extension are practically assured of deeper and larger production. The only disconcerting factor in connection with this assumption is the fault line which extends through this area. This fault zone will either result in large production or nothing at all, for as a rule the most satisfactory producers are located in close proximity to fault lines.

It is evident the majority of operators in the extension anticipate the development of a lower horizon, as practically every well is scheduled to be finished with an 8¼-inch oil string. In contrast to the drilling done at Inglewood, where for some reason or other, most of the wells were finished with small holes which practically preclude deepening work under favorable conditions, operators in the southwest extension of Huntington Beach are playing the game safe by finishing with a hole sufficiently large to permit drilling down to a deeper horizon if developments warrant.

The Julian Petroleum's No. 1 Lambert, which came in doing 310 bbls. from 3,106 feet, has built up to 520 bbls. and the company has announced its intention of spudding in eight additional wells immediately. The company has had No. 1 Davis, No. 1 Plavan, No. 1 Stein and No. 1 Johnson rigged up for several days and, in view of the company's announced policy, these holes will undoubtedly be spudded in within a day or two. The Standard, California Petroleum and Superior are engaged in a rather spirited drilling campaign, each running five strings of tools and in view of the fact that the Petroleum Securities is rigging up five new wells in addition to No. 1 Gross and No. 1 Montgomery, already under way, it appears likely this quartet will finish something like 25 wells between them within 60 to 90 days.

E. J. Miley and George F. Getty should also account for around five wells each during this period, as they have a rather ambitious program. On Lease B, north of the town lot area in the southwest extension, the Standard added a new producer to its list, No. 49, and returned another to production after redrilling and deepening it. The latter was No. 35, which is pumping 150 bbls. daily from 3,425 feet. No. 49 was a new well drilled to 3,545 feet and, although the initial output, 271 bbls. of 21.2 gravity oil, is cutting approximately 10 per cent, it is thought the well will clean up after it has been on production for a few days. The California Petroleum has just spudded in its second well on the Buck property, approximately a mile north of the proven limits of the field previous to the completion of No. 1 Buck, which is doing 270 bbls. daily.

Long Beach

The small number of producers which have been finished in the northwest extension of the Long Beach Field during the past few weeks and the decline in production which has taken place indicates quite clearly that the development and production peak was passed several weeks ago and that the future does not hold much promise, although additional completions can be anticipated from time to time. It is rather interesting to note that only two geologists are on record as stating previous to the development of the deep zone that the lower horizon would not be as productive as the upper sand and would not warrant drilling unless

(Continued on Page 116)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, Well and Location—	S-T-R	Depth	Status
Union, No. 1 Bryant, Seal Beach	2- 5-12	5,318	br. sh. drilling
Bellflower, No. 1 Blythe, Bellflower	..	Rig	spud soon
Marine, No. 1 Strong, Bellflower	24- 3-12	4,139	gr. sd. drilling
Feather & Preston, No. 1 Blinn, Clearwater	16- 3-12	3,146	gr. sd. drilling
Union, No. 1 Howland, El Segundo	24- 2-15	4,330	sd. sh. drilling
Smith Pet. Co., No. 1 Johnson, Hawthorne	17- 3-14	3,620	hd. sd. drilling
Associated, No. 1 Cypress, Ingelwood	34- 2-14	3,010	sh. gr. sd. drlg.
Dominguez Exten., No. 1 Compton, Dominguez	27- 3-13	Rig	rigging up
Julian, No. 1 Trust, Dominguez	19- 3-14	5,645	sd. sh. drilling
Milham Expltn., Well No. 2, Del Rey	34- 2-15	6,066	sd. sh. drilling
Barnsdall, No. 1 Merlo, Puente	35- 1-11	4,321	sd. sh. drilling
Petroleum Sec., No. 1 Sesnon, San Fernando	14- 2-16	3,425	sd. sh. drilling
Standard, No. 1 University, San Fernando	15- 2-15	3,770	hd. sd. drilling
Standard, No. 1 Austin, Topango	11- 1-17	1,240	hd. sd. drilling
Union, No. 1 Saugus, Saugus	15- 4-16	3,817	br. sh. drilling
Union, No. 2 Olinda, Orange Co.	10- 3- 9	5,121	unfavorable
Halfhill Packing Co., No. 2 Jeffries, Burbank	2- 1-15	991	hd. sd. drilling
Calif. Pet. Dev., No. 1 Spitz, Capistrano	2- 8- 8	120	gr. sd. drilling
Petroleum Sec., No. 1 De Baker, Bandini	..	....	location

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Marland, No. 1 Williams, Santa Barbara	32- 9-32	4,286	test unsats.
Union, No. 2 Theta, Kern County	23-28-26	890	survey hole
Schwartz, A. G., Well No. 1, Rosedale	25-29-26	4,825	hd. sh. aband.
Taylor, W. W., No. 1 Clovis, Fresno County	5-13-22	1,065	hd. sd. drilling
Associated, No. 2 Huron, Fresno County	20-19-17	Rig	survey hole
Fresno United, Well No. 3, Raisin City	23-15-18	3,496	suspended
Federal Expltn., No. 1 Kinsella, Tulare Co.	15-22-24	1,955	cemt. 12½-in.
Bolsa Chica, Well No. 1, Kettleman	30,23-19	2,300	sd. bl. sh. drlg.
Marland, No. 1 Elliott, Kettleman	12-22-17	5,570	fishing
South Coalinga, Well No. 1, Kettleman	35-24-19	1,335	bl. sh. drilling
Shell, No. 1 Berlywood, Moorpark	32- 3-20	5,665	unfavorable
C. C. M. O., No. 1 Hobson, Ventura Co.	22- 3-24	5,830	sd. sh. drilling
Milham Expltn., No. 1 Sexton, Ventura Co.	19- 3-22	6,017	set 6¼-in.
Milham Expltn., No. 1 Buttonwillow, Kern	8-28-23	Rig	rigging up
Standard, No. 1 Palmer, Santa Barbara	13- 9-22	2,820	sd. sh. drilling
Standard, No. 1 Carmarillo, Ventura Co.	..	2,301	conglm. drlg.
Standard, No. 1 McGrath, Ventura Co.	18- 3-22	1,296	survey hole
Pan American, No. 1 White, Monterey Co.	27-23-12	2,277	br. sh. drilling
Pyramid, No. 1 Trescony, Monterey Co.	26-21- 9	2,750	sd. bl. sh. drlg.
Shell, No. 1 Murphy, Petaluma	29- 5- 6	2,360	hd. sd. drilling
Miley Expltn., No. 2 Casitas, Ventura Co.	7- 3-25	566	hd. sd. drilling
Rio Grande, No. 1 Canet, Ventura Co.	9- 3-23	1,460	gas show, drlg
Sentinel, No. 1 Tejon, Ventura Co.	5- 5-17	562	suspended
Woodward & Sheedy, No. 1 Famosa, Kern Co.	29-27-26	Rig	rigging up
Henderson Pet., No. 2 Piru, Ventura Co.	..	721	hd. sd. drilling
Ozena, No. 1 Allensworth, Tulare Co.	26-24-24	Mtl.	building rig

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total This week	Daily Average	Total Last week	Daily Average	This year To date	Same time Last year
Crude oil	321,184	45,883	163,360	23,337	8,362,773	10,585,997
Fuel and gas oil	343,390	49,056	372,533	53,219	6,721,432	237,873
Gasoline	80,822	11,546	76,831	10,976	4,772,332	5,712,966
Tops	.....	.....	.....	.....	74,619	402,994
Coastwise—						
Crude oil	397,304	56,758	459,265	65,609	15,716,799	21,704,701
Fuel and gas oil	405,838	57,977	265,470	37,924	7,579,103	7,901,290
Gasoline	163,991	23,427	168,959	24,137	4,948,321	3,207,213
Kerosene	.....	.....	.....	.....	170,664	244,136
Tops	.....	.....	45,280	6,469	620,124	128,986
Exports—						
Crude oil	123,943	17,706	41,733	5,962	3,762,636	1,714,272
Fuel and gas oil	385,030	55,004	482,003	68,858	11,899,799	10,420,543
Gasline	83,163	11,880	171,883	24,555	3,598,702	2,755,896
Tops	.....	.....	.....	.....	.....	170,407
Kerosene	152,830	21,833	148,517	21,217	1,739,933	1,684,785
TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS						
Fuel and gas oil	73,968	10,567	.....	.....	958,950	218,414
Gasoline	.....	.....	.....	.....	685,236	943,485
Tops	.....	.....	.....	.....	229,775	794,918
Lubricants	.....	.....	.....	.....	275,617	235,533
Coastwise—						
Fuel and gas oil	70,659	10,094	64,053	9,150	2,955,821	2,405,451
Gasoline	97,990	13,999	16,280	2,326	3,147,060	1,786,769
Kerosene	3,654	522	.....	.....	274,613	143,822
Exports—						
Fuel and gas oil	123,697	17,671	90,862	12,980	2,291,051	1,688,470
Gasoline	.....	.....	189,875	27,125	1,166,681	417,581
Keorsene	97,429	13,918	113,009	16,144	1,462,561	723,316
Lubricants	.....	.....	8,759	1,251	8,759	243,429

New Guiberson Type E Production Swab

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The men are J. W. McMahon and C. R. Hulick.

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Sunburst Wildcat Proves Surprise

Ohio Oil Co. Producer in the Ellis Sand Is Good for 100 Barrels Found a Mile Ahead of Production

By Frank B. Taylor
Staff Correspondent, Rocky Mountain Area

CASPER, Wyo., Sept. 4.—The Ohio Oil Co. brought in the surprise of the week in the Sunburst Field. This firm drilled a wildcat on the east side of the field on Section 21-35-1 and brought in a producer good for 100 bbls. in the Ellis sand. The well is about a mile ahead of production on the northeast side of the field. The Ellis sand was found at 1,615 feet which makes it somewhat deeper than the average of the wells near that part of the field and this also tends to point out that the strata are dipping and that a continuation of the field can hardly be expected much farther.

The Homestake Exploration Co. completed a big producer in the Ellis sand on Section 36-35-2 at 1,410 feet. This well made about 2,000 bbls. during the first 24 hours but it is located in an area where the gas pressure has been reduced by other wells so that the initial production was less than it would have been if drilled some months ago.

The Madison Oil Co.'s well on the extreme west side of Sunburst Field, Section 31-35-3, created considerable excitement the past week by making several flows of oil. This well has been shut down for several months due to a legal tangle over the title and the well has never been drilled to the Ellis sand. When a crew started to put a string of tubing in the hole preparatory to making a test of production the well flowed and it is estimated good for 50 bbls.

The California Co. has a producer on the Lorensen tract, after shooting in the Ellis sand at 1,450 feet. It is considered an average well. The Zenith Oil Co., drilling a wildcat on Section 31-32-2, south of Shelby, has a show of wet gas at 1,365 feet, but nothing of commercial size yet.

L. F. Sontag, drilling a wildcat on the east side of the Cat Creek Field has a dry hole on Section 17-15-30.

In the Lake Basin Field in central Montana, Stillwater County, the Record Petroleum Co. and the Barnsdall-Foster Corp. drilling a joint well, found a heavy gas flow at 3,150 feet in the Frontier formation and the flow is estimated at 20,000,000 feet. This gas will be shut off with a string of casing and the well drilled to the Dakota formation which is expected about 3,800 feet.

Half Year's Output

From the records compiled by the State officials in charge of the oil output of Montana, the fields of that State have produced in the first six months of 1926, nearly as much as was produced during the whole of 1925. The total for the half year is 3,812,162 bbls. and this figure is only 208,000 bbls. under the total production for 1925. This oil comes from the Sunburst Field in the main, but Cat Creek, Lake Basin and a part of the Elk Basin Field contribute to the total.

In the lake country in southern Flathead County, west of the Sunburst area about 100 miles some scouts have reported structures in some mountain valleys that show Cretaceous fossils. This area lies west of the Continental Divide in a beautiful scenic region, but has heretofore been thought to lie in the lower ages of strata that are not favorable for petroleum deposition. The area consists of high mountain ranges with deep valleys between and in some of these valleys it is reported Cretaceous fossils have been found with a well defined outcrop. This would indicate the oil possibilities are good and the region worth a close survey.

Some of the large oil companies are reaching into the north for new territory and the Marland Oil Co. has a corps of geologists in Canada, examining the country in southern Alberta for possible structures. This country has already been gone over in a preliminary way by the Geologists of the Dominion of Canada.

Salt Creek Completions

In the Salt Creek Field, the Midwest Refining Co. completed 11 new producers through its subsidiary companies. The Wyoming Associated Oil Co. completed a producer on Section 26-40-79 that started off at 356 bbls. from the first Wall Creek sand at 1,225 feet. Another on the same section and drilled by the same company will make a small pumper at 1,525 feet. The same firm also has a producer good for 25 bbls. on Section 36-40-79 at 1,486 feet and another on that Section at 1,525 feet that will do 20 bbls.

The Midwest Oil Co. has a producer on Section 35-40-79 that is producing from the shale at 2,185 feet and is making 125 bbls. This company drilled a well to the top of the Lakota sand on this section and shut the well in without a test at 2,435 feet. Another well was drilled to the Lakota on the same section by this company and shut in at 2,393 feet without a test. On Section 26-40-79, the Midwest Oil Co. drilled a well to the top of the Lakota and shut down at 2,415 feet without testing. The same firm also drilled a small producer on Section 35-40-79, finding production that will make a pumper at 1,200 feet. On Section 14-40-79, the same firm has a 10-bbl. well in the shale at 1,020 feet.

The Wyoming Oil Fields Co. completed a producer on Section 23-40-79 in the first Wall Creek sand at 1,200 feet that started off at 72 bbls. per day.

The Ohio Oil Co. completed a 30-bbl. well on Section 12-39-79 in the second Wall Creek sand at 2,723 feet.

The Continental Oil Co. completed a 25-bbl. producer on Section 32-40-78 in the second Wall Creek sand at 2,540 feet.

Operations in Utah

The report from Utah of the Utah Southern Oil Co.'s operations there shows the Cane Creek discovery well shut down at 3,645 feet waiting on a string of casing and with about 300 feet of oil in the hole. The second well drilling, located on the Shafer Dome about 5 miles south of the Cane Creek is at 2,325 feet and running the 8-inch casing. The Lockhart Canyon well and the Cedar Mesa are starting at the top of the hole. The Canyon well on San Juan County is setting a string of casing at 1,040 feet.

The Prairie Oil & Gas Co. is preparing to lay a pipeline from the Mahoney Dome in the Lost Soldier Field to the Parco refinery. This new pipeline will be of 8 and 10-inch pipe and will carry gas from the Mahoney wells.

The tests being made at Salt Creek by the Midwest Refining Co. towards placing the waste gas after it passes through the compressors, back in the Wall Creek sands, points to a lessened supply of gas for the refineries at Casper from the Salt Creek Field and a heavier demand being made on the Lost Soldier Field. The supply is considered sufficient at Lost Soldier to run both the Casper and the Parco refineries.

Sunburst Transfers

The transfer of the O'Neil interests, owners of the International Refining Co. and other firms as subsidiaries, to the California Petroleum Co. for $5,000,000 was the second large transfer in the Sunburst Field in August, the Julian Petroleum Co. of California having recently taken over the holdings of the Rice and Fulton interests for $3,250,000.

Two years ago the O'Neil brothers came to Sunburst and started the International skimming plant in the town of Sunburst. This was at first only a 500-bbl. plant, but it grew steadily and at present has a capacity of 12,000 bbls. Besides the success with the refinery, the O'Neil brothers were equally successful in the field. Today the leases at Sunburst Field have a production of 28,000 bbls. and the holdings amount to 4,000 acres in Sunburst. In the Cat Creek Filed, the O'Neil interests have 1,000 acres of land and a production of 1,400 bbls. daily.

The O'Neil refinery at Sunburst was the first refining plant to declare a premium for Sunburst crude and this was done when the oil was selling at a market price of 70 cents per barrel. The refinery was a topping plant where all the naphthas from the very volatile cuts, down to the heavy gasolines and kerosenes, were run over together and then shipped out to some other refinery that specialized in rerunning this top and dividing it into the different commercial products.

Later the Sunburst plant was enlarged and started to make its own cuts for the local trade and for nearly a year the plant has been turning out a high grade gasoline for local consumption. The recent establishment of a low freight rate from the Sunburst Field points to refining points in Oregon and Washington, for refinery tops has awakened interest in topping crude and heavier shipments are expected to refineries on the Pacific Coast.

Runs From the Fields

Salt Creek	48,500
Teapot	1,040
Big Muddy	3,300
Grass Creek	3,140
Elk Basin	790
Greybull	20
Rock River	2,580
Notches	390
Rex Lake	240
Lance Creek	1,170
LaBarge	120
Poison Spider	900
Osage	340
Hamilton Dome	1,170
Lander	300
Byron	40
Pilot Butte	40
Lost Soldier	5,390
Ferris	80
Simpson Ridge	120
Cat Creek	2,550
Lake Basin	200
Sunburst	25,000
Florence	500
Moffat	3,170
Tow Creek	815
Fort Collins	3,850
Boulder	25
Rangeley	100
Hogback	690
Rattlesnake	740
Artesia	3,000
Total	310,310

WAINWRIGHT WELL MAY DO 300 BBLS.; JUMPING POUND FIELD PROMISING

By Victor Lauriston

CHATHAM, Ont., Sept. 4.—In the Wainwright field east of Edmonton, Western Consolidated Oil Co.'s No. 2 has been drilled into the sand and is flowing under strong gas pressure. No capacity test has yet been made, but the well may be good for 300 to 400 bbls. a day. Production was secured at 2,219 feet and the test has been drilled 14 feet into the sand. Production is an asphaltic crude, somewhat lighter than encountered in the other Wainwright producers; it may run 22 degrees or a little better. The test may be drilled deeper into the sand.

It is reported that immediately Western Consolidated No. 2 is finished, the drillers will complete No. 1, which has been standing unfinished at about 1,450 feet depth. This may be carried down below the producing sands heretofore encountered in the Wainwright field, to test the lower horizons, where possibilities of lighter oil are thought to exist. None of the tests in the Wainwright field has been carried much below the producing horizon around 2,200 feet. Dr. G. S. Hume, government geologist, considers that lighter oil in larger quantities may be found in the lower cretaceous.

In the Ribstone field, near the Alberta Saskatchewan boundary, both Imperial-Ribstone No. 1 and Ribstone Oils, Ltd., are reported drilling. Advance Oil Co.'s No. 3 is reported to have spudded in.

Turner Valley

In the Turner Valley field, southwest of Calgary, interest at present centers in the Vulcan Oils, Ltd. deep test. The drillers have been held up by a difficult fishing job and have lowered the 6¼-inch casing to the top of the Madison limestone at 4,865 feet. The bottom of the hole is at 4,907 feet and it is intended to drill a few feet deeper in order to carry the entire string of tools clear to the bottom of the casing before cementing the 6¼-inch. A valve sufficient to handle 3,000 pounds pressure is being installed.

Vulcan's No. 1 is about a half mile from the Royalite No. 3 naphtha gusher, which got its main production at approximately 3,740 feet, after drilling 310 feet into the Madison limestone. The limestone is approximately 1,430 feet deeper in the Vulcan well, indicating that it is located considerably lower on a decidedly steep structure. The Royalite No. 4 got a heavy flow of wet gas, condensing crude naphtha under pressure, and the Vulcan Oils, Ltd. looks for crude oil where it is drilling deeper on the structure. The test will probably have to go to about 5,200 feet, unless the producing sand at this point is nearer the top of the Madison.

Cooper-Nanton Oils, Ltd., is around 3,300 feet, and nearing the top of the Madison limestone. Great West Oil Co.'s No. 1 is apparently close to the Madison limestone. Royalite No. 5, Dalhousie No. 1 and Dalhousie No. 3 are all in approximately the same horizon. Illinois-Alberta Oil & Refining Co. which has been in the top of the Madison for some weeks and shut down is reported continuing as a diamond drill test, which may be carried to the bottom of the deep limestone.

In the border fields, Imperial Oil, Ltd. Burdett No. 1, Section 8-11-11w4, is down 1,700 feet with a rotary test and drilling steadily. This test is expected to reach the gas sands in this area early in September, but will be carried deeper

(Continued on Page 137)

New York Oil Co. Pipe Line At Casper Wyoming

REPUBLIC

Republic 10″ wrought steel pipe was used in the newly constructed line of the New York Oil Company, from Sand Draw to Dutton Basin in the inter-mountain Wyoming district. In its issue of Oct. 18, 1925, the Casper Herald says, "A network of Republic steel pipe criss-crosses the State of Wyoming."

Tubing—Casing—Line—Drive Rotary Drill Pipe

Write for quotations on Oil Country pipe.

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Erratic Well in Perry County, Ohio

Starts With 80 Bbls. But Dwindles With Gas Pressure to 48 Bbls. West Virginia's Largest Producer Is 50 Bbls.

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Sept. 6.—As indicated by the field reports coming in, southwest Pennsylvania, West Virginia and southeastern Ohio will have completed more wells in August than in July. At the same time the new production will be considerably smaller, due to the completion of fewer large wells in the deep sand territory in southeastern Ohio and in Ritchie and Clay Counties, West Virginia. In new work under way there will be more wells drilling than at the close of July. This is due largely to the great activity that has recently come to the front in Guernsey County, Ohio.

In the week just closed about the same number of wells was completed as during the preceding week, but a lack of large producers. Nearly all of the work is of the routine kind. In just a few counties in southwest Virginia there is a little experimental work under way and starting, most of it backed by the various gas companies.

Best Producers for Week

In the southwest quarter of Section 2, Jackson Township, Knox County, Ohio, the Pure Oil Co. completed a test on the A. L. Mizer farm. It produced 40 bbls. the first 24 hours after shot in the Clinton sand.

In the southwest quarter of Section 21, Harrison Township, Perry County, the Standard Hocking Coal Co. got an erratic producer at No. 3 on its own property. It had considerable gas when drilled into the Clinton sand and flowed 80 bbls. the first 24 hours. The gas pressure subsided and the succeeding 48 hours it flowed but 30 bbls. Its status as a producer will be determined later. In the southwest quarter of Section 28, same township and county, the Leonard Oil & Gas Co. had a similar experience when it drilled its test on the George Allen farm into the Clinton sand. The well produced 45 bbls. the first 24 hours and then quit and produced nothing the succeeding four days.

In the southwest quarter of Section 25, Perry Township, Coshocton County, the Arkansas Fuel Oil Co. completed a test on the E. C. Powell farm. It produced 32 bbls. the first 24 hours.

A 50-bbl. producer was the best the West Virginia fields had to offer. It is John Starcher's second test on the Metz heirs farm, located on Meadow Run of Goose Creek, Grant district, Ritchie County. In Henry district, Clay County, the South Penn Oil Co. completed in the Big Injun sand No. 33 on the O. D. Stockly farm good for 40 bbls. a day.

In Pleasants County, one of the very old producing counties in West Virginia, some fair producers have recently been completed in the Eureka district. The New York Petroleum Co. got a 25-bbl. producer in the Big Injun sand when it completed No. 5 on the G. Hendricks farm.

In Center district, Wetzel County, the Hope Construction & Refining Co. got a 20 or 25-bbl. producer when it drilled a well on the J. A. Riter farm into the Gordon sand. The southwest Pennsylvania fields completed no large wells and the one-time good producers in Morris Township, Greene County, continue to decline.

West Virginia

In Washington district, Upshur County, the Edgell Oil & Gas Co.'s test on the C. Willfong farm is a light gasser in the Squaw sand. In Meade district, the Hughes River Oil & Gas Co. is drilling a test on the J. L. Williams farm. In Collins Settlement district, Lewis County, the Mud Lick Oil & Gas Co.'s test on the E. G. Davisson farm is a light gasser in the stray sand. In the same district, the West Fork Oil & Gas Co. is down 2,000 feet on the Enos Clark farm.

Deep Test in Cabell County

On the waters of Mud River, Grant district, Cabell County, located in the town of Milton, the Harshbarger Oil & Gas Co. has completed a test on the E. E. and C. L. Harshbarger farm. It was drilled 14 feet into the Corniferous lime to a total depth of 3,921 feet. Nothing was found in any formation except a little gas in the Berea grit.

On Rocky Creek, Scott district, Putnam County, 2,000 feet northeast of Kelly & Kirtley's test on the Jennis Jones farm the same parties have completed in the salt sand a test on the C. L. Sanders farm. It is a gasser good for 700,000 feet. On the same stream and in the same district, Thompson, Shannon & Co. have completed a test on the Parker School House lot, a duster in the salt sand.

Dry Hole in Roane County

In Curtis district, Roane County, the South Penn Oil Co.'s test on the Phoebe Rhodes farm is a duster in the Berea grit. On Laurel Creek, Union district, Wood County, the same company has started to drill No. 5 on the Daniel Wharton farm.

In Henry district, Clay County, West Virginia, the South Penn Oil Co. has completed in the Big Injun sand No. 8 on the Joseph Belcher farm. It is good for 15 bbls. a day in the formation named. In Battelle district, Monongalia County, the Manufacturers Light & Heat Co.'s test on the Clara Tennent farm is a gasser in the Gordon sand. In the same district, the same company is drilling at 1,900 feet at a test on the J. L. Hennen farm.

Gassers in Lincoln County

In Union district, Linclon County, the Union Oil & Gas Co.'s test on the Willard Harless farm is a gasser in the Berea grit. In the same district, the Huntington Development has a gasser in the same formation at a test on the Julia M. Egnor farm.

In Carroll district, Lincoln County, the Cambridge Gas Co.'s test on the H. H. Wade farm is a gasser in the Berea grit. In the same district, the Columbia Gas & Electric Co. has a gasser on the George and Walter Chambers farm. In Duval district, the United Fuel Gas Co. completed a gasser in the same formation at No. 3 on the Horse Creek Coal & Land Co. property.

In Union district, Clay County, the Chalmer Oil & Gas Co. has completed in the same formation a second test on the Samuel Samples farm. It is a good gasser.

Boone County

In Scott district, Boone County, the Owens Bottle & Machine Co. completed a gasser on the Cassingham & Co. property. In Washington district, same county, the same company completed No. 4 on the Little Coal & Land Co.'s tract. It is a light gasser in the Big Injun sand.

In Logan district, Logan County, the Wocotock Oil & Gas Co.'s No. 13 on the Dingess Run Coal Co.'s property is a gasser in the same formation, estimated to be good for 1,250,000 feet. In Jefferson district, Lincoln County, the Cambridge Gas Co.'s No. 3 on the Cora Linville farm is a gasser in the Berea grit.

Pleasants County

In the Eureka district, Pleasants County, D. A. Dickens & Co. had a gratifying experience at a well drilled more than a year ago. After pumping and working with if for many months it got a producer good for 20 bbls. a day on the William E. Hammett farm. In the same district, the Emerson Oil Co. is drilling Nos. 33 and 37 on the E. N. Cook farm.

On Green Creek, Walton district, Roane County, the Clifton Oil & Gas Co. has the rig completed for No. 15 on the I. L. Summers farm. In Sherman district, Calhoun County, the White Pine Oil & Gas Co. has a rig up on the Francis-Gainer farm.

On Ten Mile Creek, Ten Mile district, Harrison County, the Conservative Oil Co. has drilled No. 4 on the A. A. Williams farm through the fifth sand. It is a light gas well. In the Burning Springs district, Wirt County, Roberts Brothers completed in the Big Injun sand No. 147 on the Rathbone Oil tract. It is dry and abandoned.

In West Union district, Doddridge County, the Hope Construction & Refining Co. has a gasser in the Gordon sand at a test on the T. J. Smith farm. In Liberty district, Marshall County, the Manufacturers Light & Heat Co.'s test on the W. B. and Emma Calvert farm is dry in all sands.

In Mannington district, Marion County, the Carnegie Natural Gas Co. has a fifth sand gasser at a test on the S. C. Thorn farm. In the same district, the Clifton Oil & Gas Co. is testing for oil in the Gordon sand on the Frank Snyder farm.

Braxton County

In Otter district, Braxton County, the Pittsburgh & West Virginia Gas Co.'s test on the F. B. Dobbins farm is a duster and has been abandoned. In Birch district, the same company's test on the Sarah See farm is a gasser in the salt sand. In Walton district, Roane County, the United Fuel Gas Co. has a gasser in the Big Injun sand at a test on the W. C. Campbell farm.

Week-end Development

The West Virginia fields had very few completions at the close of the week of development work. The best well completed was the South Penn Oil Co.'s No. 24 on the O. D. Stockly farm in Henry district, Clay County. The well is estimated to be good for 50 or 60 bbls. a day. Its location is somewhat important as it is the farthest northwest from the pool proper, of any well previously completed. A number of wells are due to get the sand in a few days.

The Big Bend Oil Co. has completed in the Big Injun sand a test on the George Cilvin farm, in Union district, Pleasants County. It is a duster. In Murphy district, Ritchie County, the Spencer Oil & Gas Co.'s second test on the E. C. Wilson farm is a gasser in the Big Injun sand. In the same district, the Hope Natural Gas Co.'s test on the C. B. Nutter farm is a light gasser in the same formation. The same company has a rig up on the H. P. Camden farm. On the Ohio River, Graham district, Mason County, one-half mile north of the test on the Charles McMillan farm, the Ohio Fuel Oil Co. has completed in

(Continued on Page 130)

SAGINAW FIELD JUST YEAR OLD REPORTS BEST WELL YET COMPLETED

By Whit

SAGINAW, Mich., Sept. 4.—A year ago last week the Saginaw Field, of Saginaw, Mich., was born when the Saginaw Prospecting Co. brought in its first Berea sand producer in the Deindorfer Woods, just north of the corporate limits of Saginaw, since which a total of 29 wells have been brought in of which 24 were producers and 5 dry holes, the latter being located outside of defined limits, none closer than a mile from production, which is an excellent record for any part of Michigan. The closest dry hole to production was the Bliss Petroleum Co.'s No. 1, on the Carl Boldebuck farm, a mile or more north of the Sun Oil Co.'s producer on the Weiss farm. Then came a dry hole across the line in Bay County, over 5 miles north of the field; then to the west approximately 5 miles was the dry hole on the Owen farm; to the southeast was the Gardner Petroleum Co.'s well on the Schwennecke farm, Section 33, Buena Vista Township, Saginaw County, and more than 5 miles to the southeast of production, which passed through the Berea sand, thence through the Saginaw sand and struck the top of the Dundee sand at 2,908 feet and struck a bountiful supply of salt water the drill stopping after passing through 9 feet of salt sand at a total depth of 3,244 feet where the venture was abandoned. The other dry hole was drilled by J. H. Shaltry and others on the Fred Pagel property at McEwen Street west of the Bay Road. As near as can be ascertained the 24 wells are producing close around 280 bbls. daily, not including several that have not yet been put on the pump. There are close to 30 strings of drilling tools at work or getting started in the field and on the outer edges.

Gets Good Producer

What has all the earmarks of the best producer yet found in the field, was the twelfth well of the Saginaw Prospecting Co., being No. 1 on the August Kruske 20 acres, in the north half of the southeast quarter of the southwest quarter of Section 11, Saginaw Township, a short distance north of the Shattuck Road and just west of the Sun Oil Co.'s wells on the Weiss and Nuerminger farms. This well was shot and during the night flowed 40 bbls. in tankage and during the following day flowed at 15-minute intervals which has delayed its cleaning out. Officers of the company say that it makes the best showing of any well yet drilled in the field. This well topped the Bere sand at 1,818 feet and was drilled 16 feet in the sand.

The Kruske well was followed by two additional producers within defined limits, both being on the Casper Ulrich farm, in the northeast quarter of Section 14, Saginaw Township, being owned by the Bliss Petroleum Co. No. 2 struck top of Berea at 1,817 feet and drilled 17 feet in to a total depth of 1,834 feet and No. 3, which topped sand at 1,822 feet and sent 20 feet in the sand to a total depth of 1,842 feet. There is about 5 feet difference in the elevation of the two wells which would make the sand practically the same depth figuring from the surface of the wells. Both wells are showing about the average production of other wells found in the field, at close

(Continued on Page 126)

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Wabash Field Leads Central West

Has Three Completions Between 100 and 125 Bbls. Morgan County, Illinois, Well Makes 25 Bbls.; Starts Activity

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Sept. 5.—Less than 30 completions were reported from the Central West Field during the week, the central Ohio area failing to report any new wells in, although quite a number are nearing the sands from which both oil and gas come. The Michigan producing area at the northern edge of Saginaw brought in three wells, all within defined limits and ranging from 20 to 40 bbls. from the Berea sand.

The Wabash County end of the Illinois Field comes forward with three nice producers ranging from 100 to 150 bbls. initial. In the southwestern part of Illinois, a wildcat well on the O. F. Conklin farm, north of Jacksonville, Morgan County, is reported showing for 25 bbls., to the east of the Ava Field, which is being developed for both oil and gas by the Mid-Egypt Oil & Gas Co. The new venture was made by Paul C. Irwin, an old-time operator and may be the forerunner of another pool similar to that of the Mid-Egypt Co., or the Waterloo Field in Monroe County to the north of the new well.

A slight extension was made to the Berne Field of Adams County, Indiana, when a test on the Edward Lugabill farm, Section 20, Blue Creek Township, of that county, came in reported good for 20 bbls. from the Trenton formation.

The southern portion of the old Lima Field of northwestern Ohio got a short extension when a test was drilled on the A. P. Rotterman farm, Section 3, McLean Township, Shelby County, which produced 30 bbls. from the Trenton at 1,295 feet. This well should encourage further test work in that vicinity. Southeast of Cygnet along the famous "Sucker-Rod Belt," in Section 17, Bloom Township, Wood County, a 45-bbl. producer was found at 360 feet in the Trenton sand on the Frank Slauterbeck farm. The Ohio Oil & Gas Co. got its first dry hole in the productive area several miles south of Perrysburg Township, Wood County, on the C. Voland lease, only a short distance from good production.

Lima Field

Drilling operations are pretty well scattered over the Lima Field of northwestern Ohio. On an auto trip from Toledo to Bowling Green, Findlay and Lima along the Dixie Highway but few drilling outfits were noticeable. It is along this highway, or in sight of it where a great deal of the late operations in Wood, Hancock and Allen Counties have taken place. There are two very good spots along this route, one in Sections 5 and 6, Eagle Township, Hancock County and another in Section 12, Bath Township, Allen County. In these two areas the new wells start with a production for 15 to 75 bbls. Two drilling outfits were seen in each of the pools and there is a large area yet to drill until the two are thoroughly drilled up, the locations being widely separated.

The most important well of the week in the Lima Field was that of the Fort Laramie Oil & Gas Co., in a test in the southwest corner of the A. P. Rotterman farm, in the northeast quarter of Section 3, McLean Township, Shelby County, some distance from production. The top of the Trenton was found at 1,255 feet and the oil at 40 feet in the sand, the initial production being 30 bbls. In Cynthian Township, same county, the Eilerman Oil Co. is drilling a test on the N. Simon farm, Section 34.

The fourth well has been completed on Catawba Island, being the Catawba Oil & Gas Co.'s No. 1 well, 200 feet from the south line and 900 feet from the west line of the Hesselbart-Smith farm, in the southwest quarter of Section 2, Catawba Township, Ottawa County, and something more than 20 miles east of the old Trenton Rock Field proper. The well is the smallest of the four, only reported at 1 bbl. Top of the Trenton was reached at 1,897 feet and drilled 100 feet in to a total depth of 1,997 feet. The Ohio Oil Co. is drilling a test on the E. E. Neal farm, in the same section not far from the small producer of the Catawba Company. In the Elmore Field, in Harris Township, same county, more than 20 miles west of the Catawba wells, the Burmann Oil Co.'s third well in the northeast corner of the H. W. Nieman farm, in the southeast quarter of Section 23, showed a first 24 hours production of 8 bbls. Sand was topped at 1,243 feet and oil at 50 feet in the sand. The Catawba well is reported to show a few thousand feet of gas which can be utilized in that well-known fruit belt.

Darke County

In Mississinewa Township, Darke County, the Illinois Oil Co.'s No. 5, in the southwest corner of the John E. Schmetz farm, in the southwest quarter of Section 2, pumped 11 bbls. initial, with sand topped at 1,123 feet and went to a total depth of 1,264 feet. The Cole Oil & Gas Co. is drilling No. 6 on the James Snyder farm, Section 11, and Ira Hance is doing the same at a second attempt on the C. D. Rutenour farm, Section 10, same township.

In Hopewell Township, Mercer County, the June Oil Co.'s fourth well, 1,500 feet from the south line and 300 feet from the west line of the Ben Hellworth farm, Section 21, had an initial production of 10 bbls. from the Trenton sand topped at 1,106 feet and 32 feet in the sand. In Center Township, Masters & Howard are drilling No. 5 on the Charlotte Nolan farm, Section 3, and the Ohio Oil Co. is drilling No. 8 on the E. Snaveley farm, same section. In Recovery Township, A. W. Neely and others are working at No. 6 on the Adam Fecher heirs' farm, Section 24. Dilbone and others are drilling a wildcat well on the B. Juette farm, Section 35, Washington Township, same county, and in Butler Township, J. C. Bailey is drilling No. 5 on the Joseph G. Wenning farm, Section 31.

In Sandusky County, Jackson Township, Haunert and Talbert's No. 8 well, 1,100 feet from the south line and 1,320 feet from the west line of the Martha A. Talbert farm, Section 17, pumped 20 bbls. initial, with sand topped at 1,265 feet and total depth of hole, 1,320 feet. The Home Banking Co.'s No. 6, in the northeast corner of the S. M. Klotz farm, Section 3, pumped 5 bbls. at a total depth of 1,359 feet, or 52 feet in the sand.

In Auglaize County, Salem Township, Moore and others abandoned No. 3, on the O. F. Benton farm, Section 6. The Rock Oil Co. is drilling No. 2 on the Clem Enneking farm, Section 28, Jackson Township. In Moulton Township, I. C. Robison is drilling a test on the Frank M. Roth farm, Section 22, and H. F. Kelly and others are drilling No. 2 J. H. Harshbarger farm, Section 10.

Allen County

In the Driver Pool, Section 12, Bath Township, Allen County, O. T. Botkins and others are drilling No. 5 P. D. Driver farm, in Section 21. C. C. Apple, well known Lima operator, is drilling No. 12 J. W. Fetter farm, and Frederick Roeder, Jr. has abandoned Nos. 3, 4, 5 and 7 John Schlosser farm, same section.

In York Township, Van Wert County, Lynch & Sellers have abandoned Nos. 1, 2, 5 and 6 Henry Clark farm, and No. 1 John Goodwin farm, all in Section 36. Same parties pulled out their Nos. 4, 7 and 11 wells on the J. C. Biner farm, Section 7, Jennings Township, same county. The Chilcote Oil & Gas Co. of Lima is reported to have brought in what shows for a small oiler near Van Wert.

Hardin Oil & Gas Co. is drilling No. 7 A. R. Zimmerman farm, McDonel Township, Hardin County, in the Roundhead Field.

One of the outstanding late completions in the Lima Field is the Ohio Oil Co.'s No. 47 well, 600 feet from the north line and 650 feet from the west line of the Frank S. Slauterbeck farm, Section 17, Bloom Township, Wood County, southwest of Cygnet, which tapped the top of the Trenton sand at 1,047 feet and found a 45-bbl. pay sand at 360 feet in to a total depth of 1,407 feet, the well being a natural producer from that depth in the sand and means that much of this old drilled-over territory still has a chance to get production at a lower depth in the sand than was the case 30 years ago.

The Oko Oil & Gas Co.'s No. 1, in the northeast corner of the C. Voland farm, mapped as the E. A. Underhill farm, Section 30, Perrysburg Township, Wood County, had a showing of gas but no indications of oil at a depth of 46 feet in the sand which was topped at 1,256 feet and total depth 1,302 feet. It goes down as a duster.

Indiana

Just at this time the most interesting spot for development work in the Indiana area is centered in what is known as the Berne Field in Adams County, which many years ago produced an abundance of crude from the Trenton sand and looks much as though it would still produce a considerable amount. For a great many years the Trenton Rock area has been very quiet due to the failure of the natural gas supply giving no fuel for pumping wells or drilling purposes. Things have changed and work will be done from now on in parts of the old field as well as around the outer edges. Since the last development started in Adams County there have been 30 wells completed. Harmon & Watts have 7; G. S. Lacknett, 7; Doctor Fee, 7; Kelly & Daugherty, 6; McKelvey & Randall, 1; John Kind, 1, and Fink & Smith, 1. Nearly a dozen strings of tools are working, which means that the Berne Field is now in the midst of a little boom. The latest completion in the field is Schultz, Haney and others' No. 1, on the Edward Lugabill 129 acres, Section 20, Blue Creek Township, Adams County, estimated good for 20 bbls. This well is quite an extension and widens the prospective field. Same parties are working

(Continued on Page 126)

BUSIEST WILDCAT SEASON OPENS IN EASTERN KENTUCKY DISTRICT

By Whit
Staff Correspondent, Kentucky-Tennessee

LEXINGTON, Ky., Sept. 6.—This is usually the season of the year when more wildcat work is done in Kentucky and Tennessee than any other portion of the year and it looks very much as though a lot of that kind of work will be done for the next few months in many of the counties, especially in the eastern half of Kentucky. In the southern central portion of the Kentucky area an attempt will be made by Asher, Sampson and others to extend the Beaver sand production into McCreary County which adjoins Wayne County to the east. This sand has produced many of Wayne County's best producers and shows long-lived wells. Several tests will be drilled on a leased block of 30,000 acres in advance of present production, although tests made near the dividing line of Wayne and McCreary show that the Beaver sand extends into McCreary County for a short distance as shown by these tests. There is now quite a leasing campaign in McCreary County by different operators who expect to test the territory they are able to secure leases upon. The Stearns Coal & Lumber Co. is interested in extensive acreage and planning to do some test work.

The most important development in the eastern division is centered in the southeastern portion of Magoffin County where some years ago Oliver Jenkins drilled a couple of light wells, and recently Hupp, Duff & Chiles, well-known operators, purchased a block of 600 acres of leases 2 miles in advance of production and have opened up what means quite an interesting extension to the field. This firm's No. 1 on the B. F. Whitt farm, District 31, of Magoffin County, was brought in for a 10-bbl. producer and was an offset to the two light wells of Oliver Jenkins. No. 2 on the B. F. Whitt has been completed and still cleaning out and showing for 25 bbls., while No. 3 is in the pay sand showing for 20 bbls. This new development is not far from the town of Ivyton, near the Magoffin-Floyd County line.

The Petroleum Exploration Co., one of Kentucky's large operating concerns, has made a location for a test on the Helton farm, on the Indian Creek Dome in Knox County, Kentucky, and will make an effort to find production in the Big Injun sand which is known to exist in that rugged mountainous country. Indications of oil were found some years ago outside of the Indian Creek Dome. The Standard Oil Co. of Kentucky has secured quite an acreage and contemplates the starting of new test work. The section including the Indian Creek Dome was mapped out by the State Geological Department a year ago, and found to cover several miles pronounced an excellent area for oil and gas prospecting.

Clay County

Clay County, which adjoins Knox County to the north, is another spot attracting much attention, owing to its great gas possibilities and the entrance of the Louisville Gas & Electric Co. and the Standard Oil Co. of Kenucky into the county means it will be developed. The Louisville company has been doing extensive drilling for a long time in Floyd and Knott Counties where a large amount of gas has been uncovered in the past few years. Should the Knox and Clay County areas prove good gas territory, there is the possibility of the construction of a gas line from there to

(Continued on Page 125)

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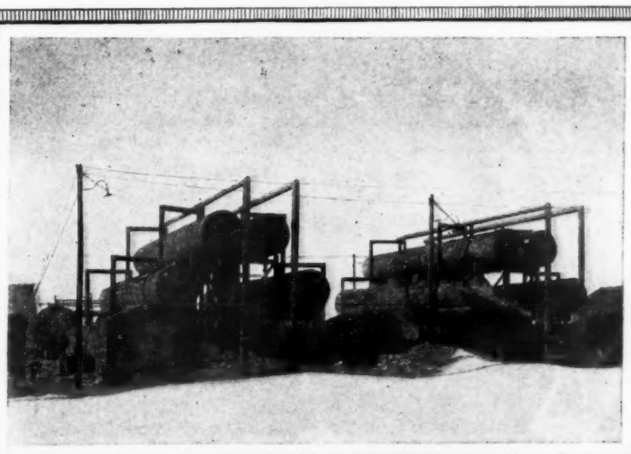

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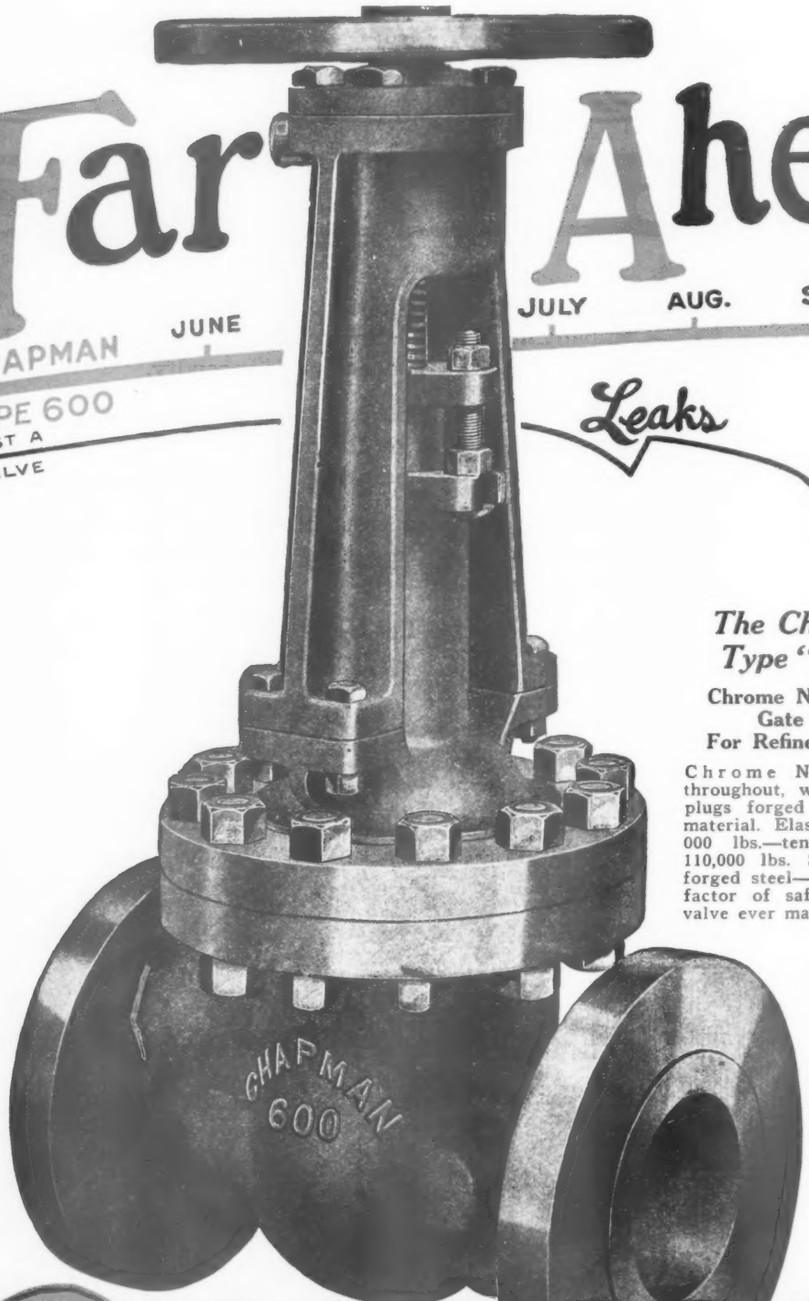

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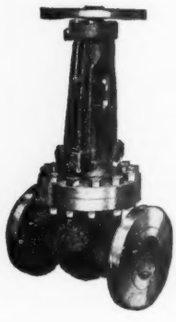

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MEN KNOWN IN OILDOM

R. M. Young

It is reported that at the next meeting of the board of directors of the Standard Oil Company of New Jersey, R. M. Young of Tulsa, Okla., will be elected president of the Carter Oil Company. He has been vice president and general manager since 1917.

The elevation to the presidency is an added expression of the confidence which the directors of the New Jersey company repose in a man who has served over 30 years under one industrial emblem, and who has bridged the gap from messenger boy to the executive offices.

Mr. Young was born at Ironton, Ohio, in 1876. When he was 6 years old, the family moved to Pittsburgh, Pa. He entered the oil business in 1893 as office boy for the Forest Oil Co. He was placed in the accounting department of the company, and it was his work in auditing and accounting which won him his promotion to executive work.

After spending seven years with the Forest Oil Co. he went to Neodesha, Kans., where he assisted in the organization of what is now the Prairie Oil & Gas Company. From 1903 to 1905, he had charge of the New Domain Oil & Gas Company at Lexington, Ky. In 1906 he was transferred to the auditing department of the Standard Oil Company of New Jersey at Oil City, Pa., where he remained until coming to Tulsa to manage the Carter interests.

His many friends rejoice that his new duties will be performed at Tulsa, and do not require his removal to New York.

PERSONAL PARAGRAPHS

Erle P. Halliburton, of cement fame, is visiting his family in California.

* * *

L. K. Park of the Portable Rig Company, Houston, Tex., is in the East on business.

* * *

David Holmes has returned to Petrolia, Ont., after two years in the Trinidad fields.

* * *

A. E. Haley of Detroit, Mich., has returned to Miri, Sarawak, Borneo, where he will drill.

* * *

Thompson Brothers, well-known central Ohio contractors of Newark, Ohio, are in the Saginaw Field.

* * *

J. B. Hasson, superintendent of the Louisiana-Arkansas division of the Ohio Oil Company, and John Hasson, Jr., scout for that company, have returned to Shreveport, La., from a visit in the East.

George Coyle, general superintendent of the Prairie Pipe Line Company, is spending his vacation in Minnesota.

* * *

Harry L. Norris, chief scout of the Prairie Oil & Gas Company, is back at the desk in Tulsa after the annual vacation.

* * *

Joseph Denham, formerly of Casper, Wyo., returned for a short business trip from his new location at Amarillo, Tex.

* * *

J. H. Harmon, well-known operator of Mansfield, Ohio, is spending some time in the Berne Field of Adams County, Indiana.

* * *

W. C. Trout of the Lufkin Foundry & Machine Company, Houston, Tex., is in California in the interest of his company.

* * *

T. H. Hammit, head of the Sinclair Oil & Gas Company offices at Enid, Okla., spent a few days at the Tulsa office recently.

* * *

Hurley Lyons, formerly of Tulsa, but now sojourning at Abilene, Tex., spent a few days at the former haunts last week.

* * *

E. L. Smith, president of the oil company which bears his name, was a visitor in Tulsa last week from his home at Mexia, Tex.

* * *

J. M. Zimmer, who has been spending six months in Petrolia, Ont., on furlough, has left via Vancouver, B. C., for the Borneo fields.

* * *

A. B. Steen, consulting engineer for The Texas Company, is in Mexico in connection with property transfers being made in the fields there.

* * *

Carl Rice of Bremen, Ohio, representing the Bessemer Engine Company of Grove City, Pa., has been looking over the Saginaw, Mich., Field.

* * *

Harry Ferree, treasurer of the Continental Oil Company, with offices at Denver, Colo., visited the Casper, Wyo., offices of that company recently.

* * *

R. Repine, manager of sales and service for the Foos Gas Engine Company, Springfield, Ohio, called on the trade in the Louisiana-Arkansas district last week.

* * *

Charles I. O'Neill, secretary of the Okmulgee District Oil & Gas Association, has returned from a vacation spent in California and British Columbia.

* * *

Craig Geddes, sales manager of the Monongahela Tube Company, spent a week in Tulsa at the completion of a four weeks' tour of the Mid-Continent fields.

* * *

Don Weir, western sales manager of the Jefferson Union Company, has returned from a trip to the California fields, and is once more at home in Dallas, Tex.

* * *

R. R. Brinkman, assistant sales manager, Shreveport Producing & Refining Company, Shreveport, La., has returned from a week's trip throughout the trade territory.

* * *

R. W. Lowe, production superintendent of the Standard Oil Company of Louisiana, has returned to his offices following a two weeks' vacation spent at Arkansas resorts.

* * *

Lewis McMahon and Joseph Afflick returned to Casper, Wyo., after a trip to the La Borge Field and some newly surveyed structures in the southwest corner of Wyoming.

* * *

R. L. James, Los Angeles, Calif., engineer for the National Gas Products Corporation, arrived in Shreveport, La., last week to build a one-unit plant for his company in De Soto Parish.

* * *

The old-time contractors and drillers are visiting the Coastal pools after an absence of many years. William Largey is in Houston and vicinity from California, where he now lives. Richard McNerney is looking over old scenes, having returned from Mexico and Venezuela after an absence of 18 years.

B. E. Hull, Houston, Tex., president of the Texas Pipe Line Company, is making a tour of inspection over the company's Louisiana-Arkansas lines with O. E. Stimpson, district superintendent.

* * *

Frederick S. Bacon, formerly president of the Puritan Dye & Chemical Company, has joined the organization of Arthur D. Little, Inc., chemists, engineers and managers, of Cambridge, Mass.

* * *

O. S. June, Lima, Ohio, retired superintendent and general manager of the Buckeye Pipe Line company, stopped off in Pittsburgh last week en route from New York City to his home, to call on old friends.

* * *

F. Christenson of St. Paul, Minn., who drilled a well on the Stengle & Craig farm, in the Berne Field of Adams County, Indiana, is back in the field after his western trip, and expects to start a second well soon.

* * *

Leslie M. Lockhart, secretary of the Rio Grande Oil Company, was married recently to Miss Genevieve Y. Borlini at the home of the bridegroom's brother in Pasadena, Calif. Mr. and Mrs. Lockhart after honeymooning at Del Monte sailed for the Orient.

* * *

B. W. Deane, long well known in the Trinidad oil industry, is in New York. After a short trip to Canada, he will make a tour of the American oil fields. His headquarters while in New York are at the Oilfield Equipment Company, 30 Church Street.

* * *

The Vacuum Oil Company has opened an office at Eastland, Tex. It will be in charge of E. M. Horrigan, who will take care of the land work. The geological forces will be headed by O. E. Disney, who will have E. B. Baldwin and F. H. Wilcox with him.

* * *

George H. Speary, formerly assistant general superintendent of the Texas Pipe Line Company, but more recently engaged in contracting and producing in the Arkansas fields, was a visitor in Houston, Tex. Mr. Speary has disposed of his interests in Arkansas and plans to return to Houston.

* * *

John B. Preston, assistant superintendent of the Companie Nationale de Petroleo refinery at Buenos Aires, is inspecting the large refining plants of the Humble Oil & Refining Company at Baytown and of the Standard Oil Company of Louisiana at Baton Rouge, La. He will visit the plants on the New Jersey Coast before returning to Argentina.

* * *

A treacherous rolling sea off Santa Barbara, Calif., was the scene of a 48-hour hair-raising adventure for Harold Barneson of the General Petroleum Corporation and a party, including his wife, when his yacht, the Dorsal, drifted helplessly for two days and nights before the steamship Yale passed in the night and discovered the disabled yacht. Neither Mr. Barneson, who is the assistant general manager of the General Petroleum Corporation, nor any of the party, suffered any ill effects.

* * *

H. C. Miller, general manager of the telegraph department of the Pure Oil Company, Pittsburgh headquarters, has completed arrangements for the extension of the company's private telegraph and telephone system from Mexia to Houston to connect with the company's offices in Houston. Wade Shakely, formerly superintendent of the Pure Oil Pipe Line Company's telegraph and telephone system in Texas, accompanied Mr. Miller to Houston. Mr. Shakely is now with the Prairie Pipe Line Company's organization.

* * *

T. G. Madgwick, British oil authority, has arrived in this country en route to Canada, where he will take up his duties as technical advisor to the Canadian Government with relation to petroleum matters. His headquarters will be in Calgary and he will be associated with Charles C. Ross, chief engineer of the Government in the Province of Alberta. Mr. Madgwick recently succeeded Sir John Cadman in the chair of technology at the University of Birmingham, England. He has traveled all over the world and is an authority on oil affairs in the Near East. His appointment to the Canadian post is considered a significant step in reference to oil development in Alberta.

"OILWELL"
PULLEY BLOCKS
(ALL STEEL)

Made in 22, 24, 26, 28, 32, 34, 37, 42, and 48-inch sizes. Can be furnished with single, double, triple, quadruple or quintruple sheaves. All pulley blocks are bronze bushed.

Regular

"OILWELL" Steel Snatch Blocks

Can be furnished with or without bronze bushings. Made in 22, 26 and 28-inch sizes in the Regular, and in 32-inch size in the Heavy Duty.

Inquire at any of our 100 Branches

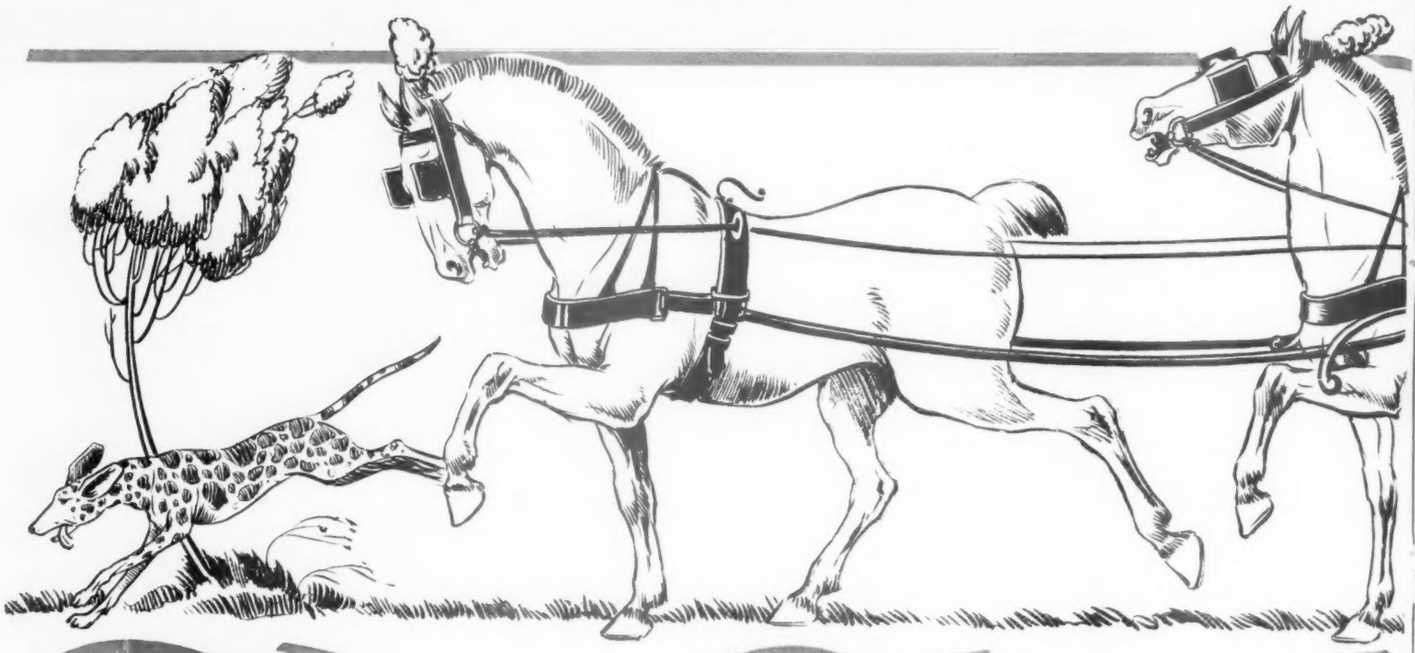
"OILWELL" Products are the Best ALWAYS and ALL WAYS

Heavy Duty

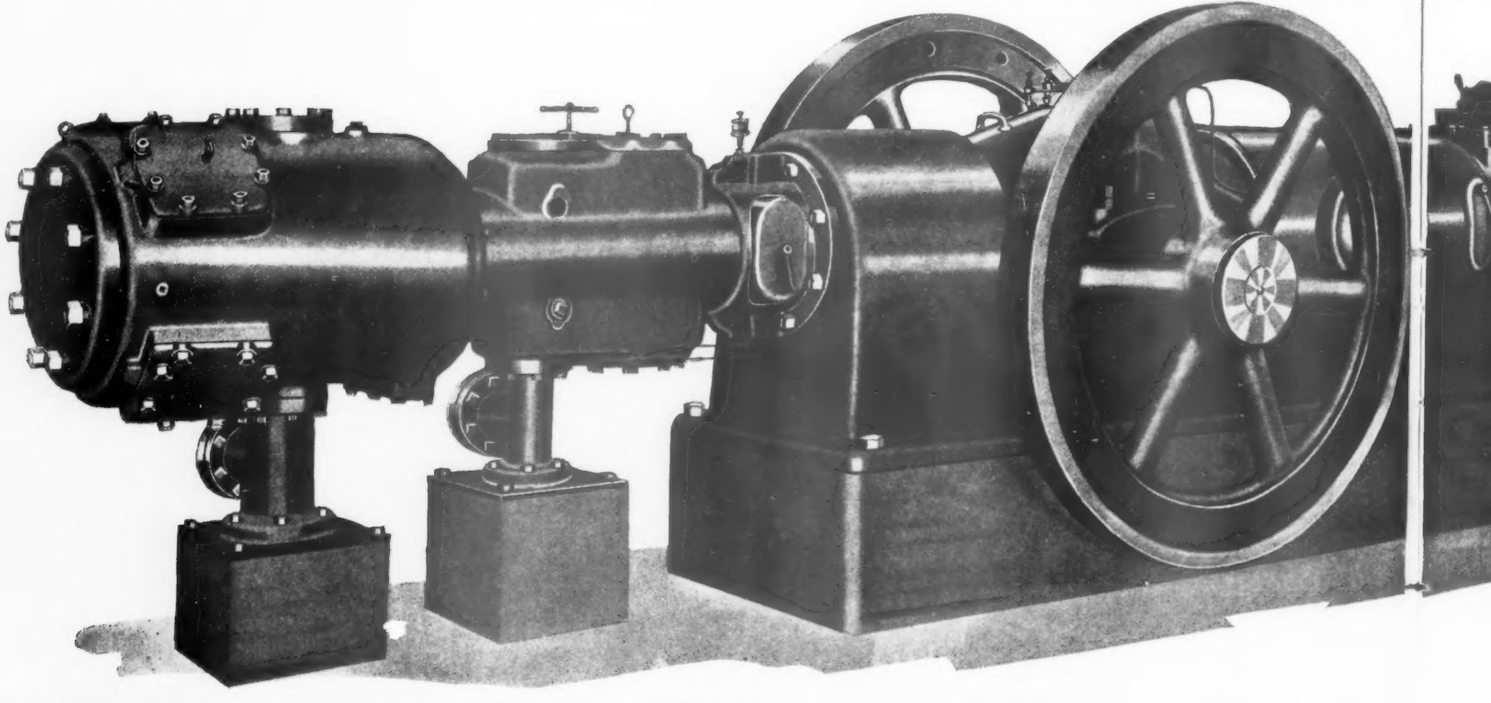
OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

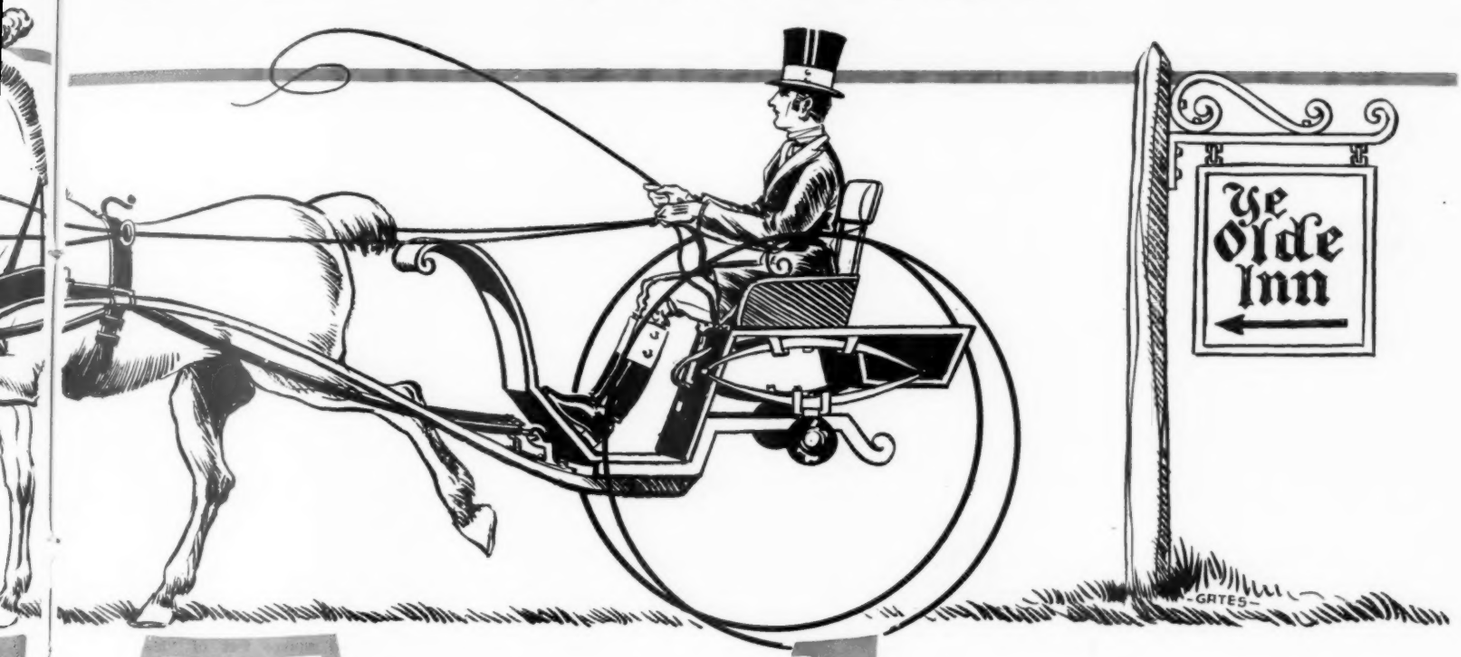
WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT



The Clark



CLARK COM



Tandem

80 H.P. 2-stage tandem high pressure compressor—single acting 2 cycle—direct connected.

100 H.P. 2-stage tandem high pressure compressor—single acting 4 cycle—direct connected.

At the request of numerous producers who have endeavored to obtain a suitable high pressure direct connected opposed type gas engine driven compressor especially adapted to flowing wells and putting pressure on sands, we have developed the Clark TANDEM, to be used with our standard 80 and 100 H.P. engines.

By the airlift method production can be materially increased and at the same time operating cost is substantially lowered.

A suitable combination can be furnished for *any intake and discharge pressure up to 1,000 pounds.* Another desirable feature of this new type is the fact that it combines the *simplicity* of a single stage compressor with the *efficiency* of the highest type 2-stage compressor. Ratio of cylinders gives maximum volume and efficiency. Swabbing and pulling of rods eliminated.

Write for complete information.

CLARK BROS. COMPANY

Olean, N. Y.

SALES AND SERVICE

Gas Engineering & Const. Company
125 West First St.,
Tulsa, Oklahoma

Smith-Booth-Usher Company
228 S. Central Ave., Los Angeles
50 Fremont St., San Francisco

McCamey and Sweetwater, Texas

MPRESSORS

EQUIPMENT AND SUPPLIES

Keith Car & Mfg. Co. Buys Majority Stock in Standard Tank Car Co.

The Keith Car & Manufacturing Co. of Sagamore, Mass., has acquired a majority of the common stock of the Standard Tank Car Co. of Sharon, Pa.

The directors of the company are: W. J. McKee, vice president, Keith Car & Manufacturing Co.; Ebon S. Keith, president, Keith Car & Manufacturing Co.; William M. Robinson and John G. Frazer of Reed, Smith, Shaw & McClay, Pittsburgh, Pa.; E. A. MacDonald, treasurer, Standard Tank Car Co.; H. C. Rorick of Spitzer, Rorick & Co., Toledo, Ohio; H. E. Coyl, vice president, Standard Transit Co.

The officers of the company are: W. J. McKee, president; E. A. MacDonald, secretary and treasurer; J. W. Keefe, auditor.

The principal executive office will remain at Sharon, Pa. The Standard Tank Car Co. owns the capital stock of the Standard Transit Co., whose directors are as follows: W. J. McKee, vice president of the Keith Car & Manufacturing Co.; Ebon S. Keith, president of the Keith Car & Manufacturing Co.; William M. Robinson and John G. Frazer of the firm of Reed, Smith, Shaw & McClay, Pittsburgh, Pa.; E. A. MacDonald, treasurer, Standard Tank Car Co.; H. E. Coyl, vice president, Standard Transit Co.; H. C. Rorick, Spitzer, Rorick & Co., Toledo, Ohio. The officers of the company are: W. J. McKee, president; H. E. Coyl, vice president; E. A. MacDonald, secretary and treasurer; J. W. Keefe, auditor.

NEW PEEP HOLE FOR FURNACES AND STILLS

The Springfield Boiler Co. has recently perfected a new peep-hole door for boiler furnaces and stills which, it is said, has a number of advantages and is easily installed on the fire or inspection door or placed on the brickwork without necessitating any serious changes in the refractory lining.

The peep-hole door consists of a square plate with a 5-inch round opening and a revolving shutter having three positions.

The new device permits a thorough inspection of furnice conditions in perfect comfort and without eye strain. It also allows working the fire without opening a large door and admitting cold air above the firebed. Its weight, packed for shipment, is only 50 pounds.

STANDARD EQUIPMENT

The Pickering Governor Co. of Portland, Conn., manufacturers of governors for steam engines, steam turbines, gasoline engines and tractors for over 65 years, advise that Pickering governors are standard equipment on oil engines built by the Titusville Iron Works, Oil Well Supply Co., Weber Engine Co., Butler Engine & Foundry Co. and Clark Brothers Co. Their new Booklet O-T, explaining the advantages of their product, is now ready for distribution and will be sent on request.

O. W. S. CO. IN OKOTOKS

CHATHAM, Ont., Sept. 4.—The Oil Well Supply Co. of Pittsburgh, Pa., is starting a supply yard at Okotoks, Alberta, to serve the Turner Valley Field. Karl Adams, who was with the company in Wyoming and Montana for nine years, will be in charge of the yard, while Norman De Rousse will continue to represent the company at Calgary.

THE BERQUIST STEAM DERRICK HAMMER

The Oil Well Supply Co. is announcing the Berquist steam hammer for dressing cable tool bits. The inventor of the hammer, C. H. Berquist, of Okmulgee, is well known as a practical oil man in the Mid-Continent Field. The hammer, which is pictured above, eliminates all the hard work of the driller and tool dresser, its inventor claims, and will perform efficiently in a standard cable tool derrick or in an outside forge house. It strikes 300 blows per minute and will dress bits under 18 inches in one heat and on 18 to 24-inch bits, it is said that the time required is one-half the ram method. In the first heat the bit can be spread and shaped properly, second heat dress out to gauge, hammer down wearing surface and trim out water courses. It eliminates the hazard of a tight hole as the crew will not avoid nor delay dressing a bit when needed. The hammer is being manufactured in Tulsa.

NECO ISSUES NEW CATALOG

The very attractive catalog of Northrup Equipment Co. has just been received and a review indicates that it contains some very interesting information for users of working barrel pumps and other pumping equipment. Announcement of the distribution of this catalog is made on the Northrup Equipment Co. advertising page in this issue.

Among the features of the new book are the introduction of wire line pumping outfit which was formerly manufactured by Carter Oil Co. Details are given concerning several other pieces of pumping equipment which have not hitherto been announced by the Northrup company. The complete line of Neco Pumping equipment is presented.

TRADE LITERATURE RECEIVED

The U-S Tool Co. of Long Beach, Calif., has distributed folders describing the U. S. disc bit, with the "marcel wave." This new tool is unique in appearance, and is made on the principle of an ordinary disc bit excepting that the cutting edges are waved instead of being straight.

Deppe Motors Corp. of 151 Church St., New York, has sent out letters on approved engine methods.

R. D. Nuttall Co. of Pittsburgh, Pa., has distributed a book entitled "Nuttall Oil Well Pump Gear Units." This company is now marketing a series of reduction gear units which have been developed especially to meet the requirements of oil field production. The units have been given exhaustive tests for pumping, cleaning, swabbing and bailing service.

The following has been received from the Edison Lamp Works of the General Electric Co., Harrison, N. J., entitled, "Lighting of Offices and Drafting Rooms;" "Lighting of the Metal Working Industries;" "Motor Car, Garage and Display Room Lighting;" "Calculation of the Lighting Installation:" "Theory of Mazda Lamps."

From the Electrical Testing Laboratories, New York, comes a booklet entitled, "Testing and Approval of Automobile Headlight and Tail Light Lamps."

The Missouri Woodworking Co. of St. Louis, has sent out leaflets describing the line of oil tank gauge poles manufactured by it.

OIL FIELD DIVISION FOR MASTER BUILDERS

Recognizing the growing importance of cement and cement mixtures to the oil industry, the Master Builders Co., Cleveland, Ohio, manufacturers for 15 years of all approved types of chemical and physical cement hardeners, has formed a special division to develop and supply materials of this class to the producers of oil. The general offices and main plant of the company are at Cleveland, Ohio, but branch offices to serve the industry will be located at the principal producing fields.

Since 1911 the Master Builders Co. has been one of the foremost exponents of hardened, waterproofed, dust-proof concrete for use in building construction, particularly in the installation of concrete floors. The Master Builders' method, by which approved concrete hardeners and waterproofers are used in accordance with modern scientific specifications, has, it is said, produced over 1,000,000,000 square feet of "Masterbuilt" floors in something over 100,000 different buildings throughout the world. The products of the company are advertised extensively in the architectural, engineering, and construction fields under the trade name of "Masterbuilt Floors."

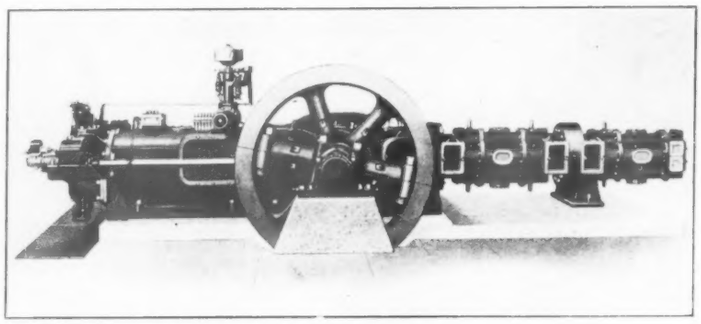
MR. KUHMAN ADVANCED

L. F. Kuhman has been appointed vice president and director of the Andrews-Bradshaw company, Pittsburgh, Pa. Mr. Kuhman has been associated with the company for the past three and a half years. For eight years prior to that time he was engaged as sales engineer for the Ingersoll Rand Co., in the Pittsburgh district.

NEW BRANCH OFFICE

On October 1 the Chicago Pneumatic Tool Co. will open its new building in the central manufacturing district on Iron Street near Thirty-seventh Street, Chicago. This building is the new home of the Chicago sales and service branch and has been constructed for the benefit of the many customers who will now be able to receive even better service, with the new facilities of this building.

BESSEMER ANNOUNCES NEW COMPRESSOR



The new Bessemer four-cycle, two-stage compressor.

For many months Bessemer engineers have been slowly and painstakingly perfecting a new and finer two-stage, single-cylinder (80 h.p. and 100 h.p.) 4-cycle compressor that would meet the requirements of oil men who require a dependable, highly efficient two-stage unit but who do not have sufficient gas to handle to necessitate the larger horsepower units.

This new compressor which Bessemer now announces, after months of testing in actual service, is a de luxe unit "whose many improvements and mechanical features," its makers say, "place it months ahead of any similar compressor of its type."

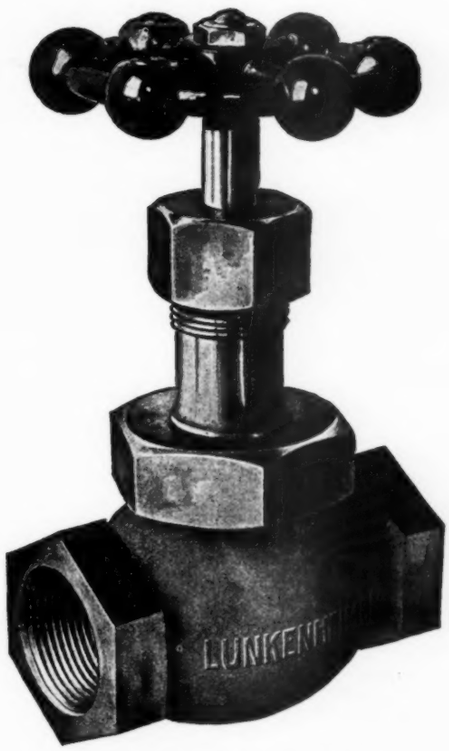
In its construction details it embodies all the recognizedly superior Bessemer features, while in its design and construction it is described as in a class by itself.

Year After Year

LUNKENHEIMER
Bronze Regrinding Valves

continue as the choice of thousands of valve users who are interested primarily in performance facts.

The inherent quality that prompts reorder after reorder for Lunkenheimer Valves is a reliable guide for all who seek dependable and economical valve service.



Lunkenheimer Bronze Regrinding Valve
Inside Screw, Union Bonnet, ⅛ to 4 in.
Outside Screw and Yoke, 1½ to 6 in.
Working steam pressures up to 300 pounds.

Lunkenheimer Distributors, located in all industrial centers, carry large stocks, and render prompt service. Call on them when in need of Valves, Boiler Mountings, and other Engineering Appliances.

Complete information is contained in Lunkenheimer Regrinding Valve Booklet F. 517 JA. A copy will be sent upon request, without any obligation on your part.

JUST FILL IN AND MAIL THE COUPON.

THE LUNKENHEIMER CO.
"QUALITY"
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Regrinding Swing Check Valve

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Gentlemen:—Please send me, without obligation, a copy of your Regrinding Valve Booklet F. 517 J.A.
Name .....
Firm .....
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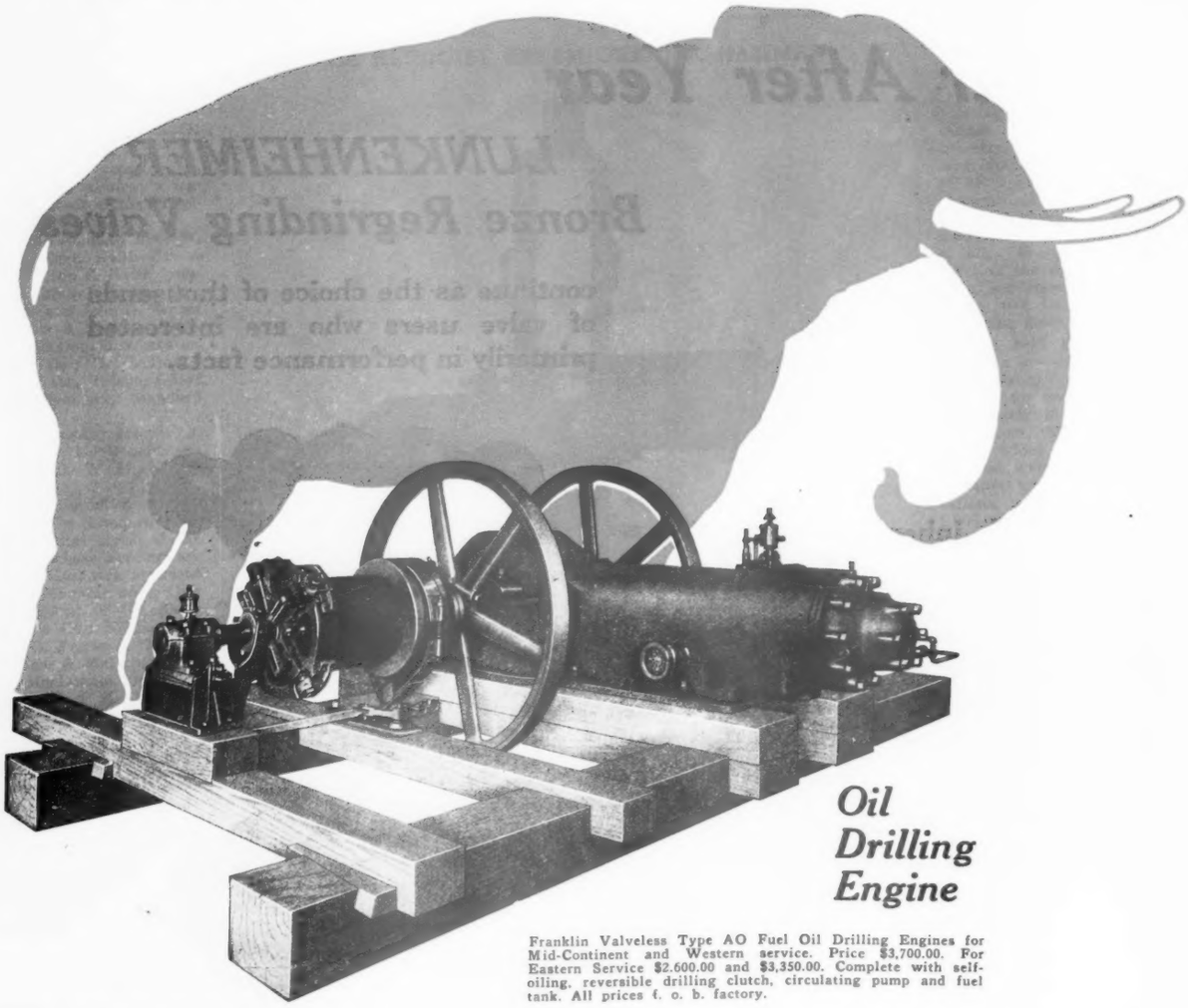
POWERFUL DEPENDABLE



Oil Drilling Engine

Franklin Valveless Type AO Fuel Oil Drilling Engines for Mid-Continent and Western service. Price $3,700.00. For Eastern Service $2.600.00 and $3,350.00. Complete with self-oiling, reversible drilling clutch, circulating pump and fuel tank. All prices f. o. b. factory.

Franklin Valveless Engines are made in types for both Oil and Gas Fuel for cable tool drilling—for any condition or depth. The Franklin is a single cylinder, three-port, two-cycle VALVELESS engine and is constructed with the fewest possible number of parts. The construction keeps out all sand and grit; no valve grinding and the bath lubricating system used reduces lubrication bills 75%.

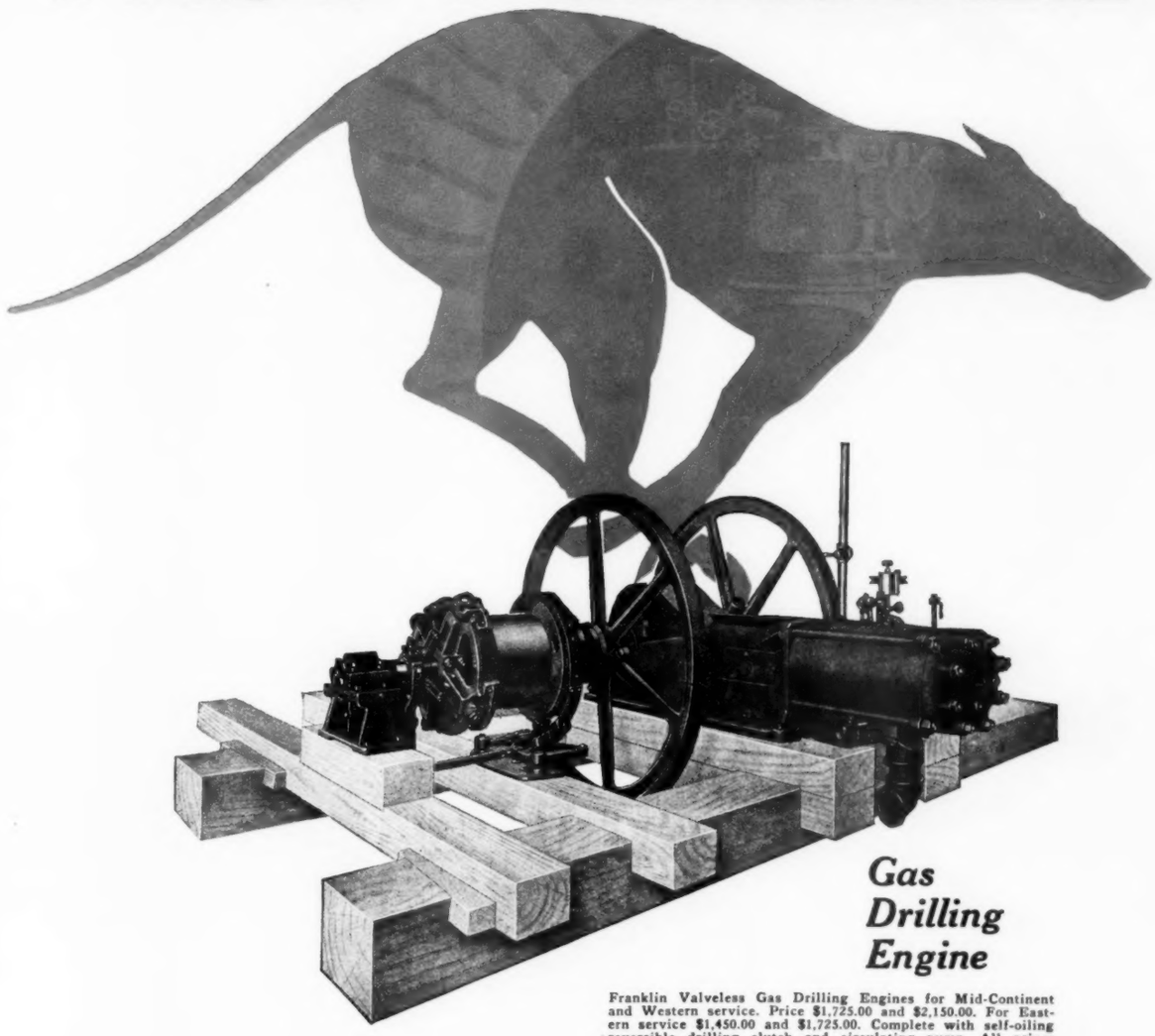
We can show you records of Franklin Valveless Engines that have drilled from 10 to 18 wells ***without one cent of repair cost.***

Add to that virtue, the lowest of operating costs, yet power, speed and flexibility and you know why the Franklins lead the field.

FRANKLIN VALVE

THEY BEAT STEAM

FAST FLEXIBLE



Gas Drilling Engine

Franklin Valveless Gas Drilling Engines for Mid-Continent and Western service. Price $1,725.00 and $2,150.00. For Eastern service $1,450.00 and $1,725.00. Complete with self-oiling reversible drilling clutch and circulating pump. All prices f. o. b. factory.

Interchangeable—Drilling, Pumping

Where gas is available the Franklin Valveless Gas Drilling Engine while being just as efficient and economical as the Oil Drilling Engine, it has another big advantage—INTERCHANGEABILITY. 25-30 H.P.—40 H.P.—50 H.P.—60 H. P. Gas Engines are all interchangeable on the same block. You can leave the Gas Drilling Engine on the block for pumping or replace it with one of less horse power without changing a single bolt.

Franklin Valveless Engine Co.

Franklin, Penna.

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Atlas Supply Company
Muskogee, Okla., and Branches

New Martinsville Supply Company
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Wooster, Ohio

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Washington Engine & Pump Company, Washington, Penna.

McEwen Brothers
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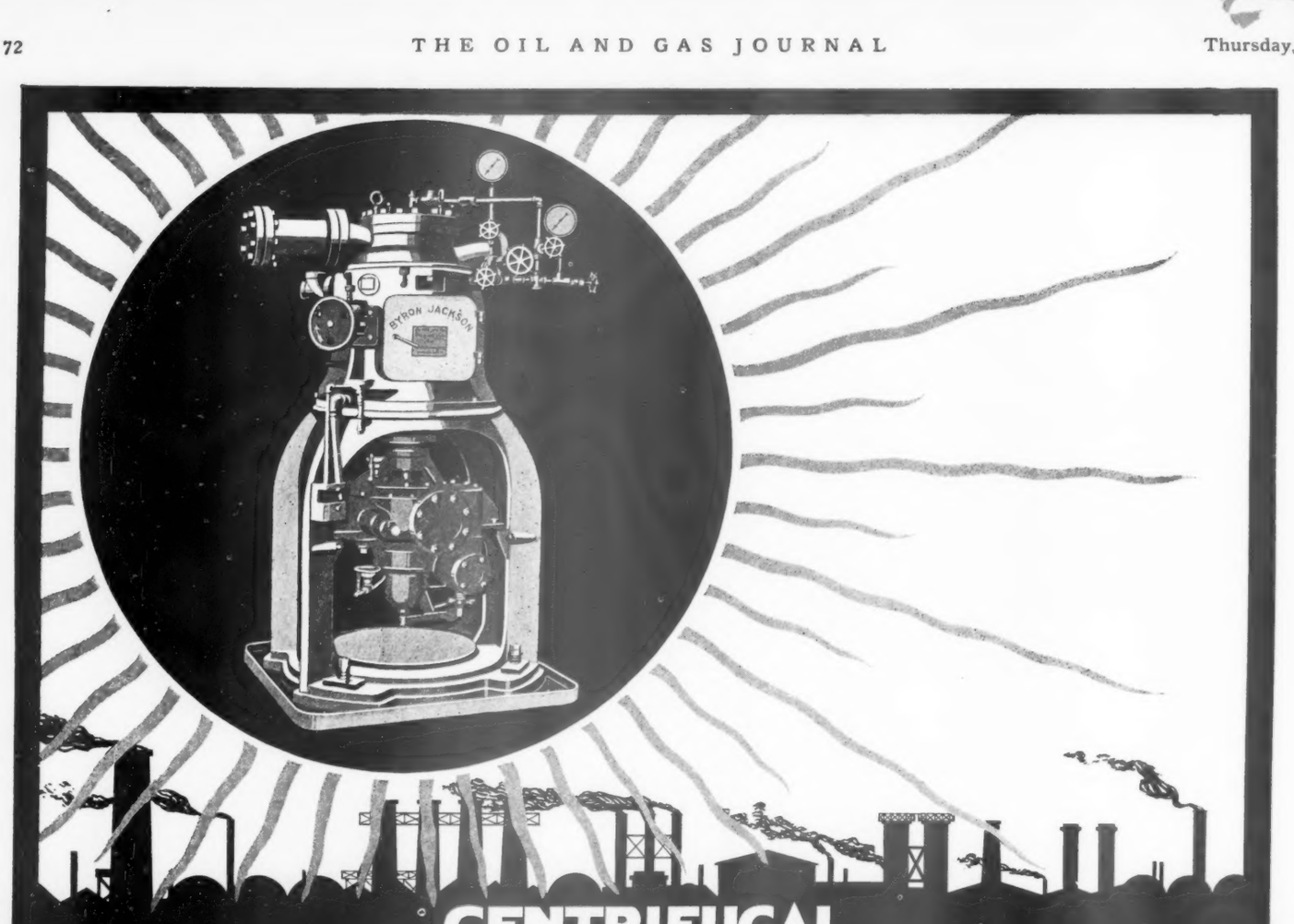
LESS ENGINES

AT EVERY TURN

XUM



CENTRIFUGAL

HOT OIL PUMPS

A BYRON JACKSON ACHIEVEMENT

Oil Refiners have adopted the Byron Jackson Centrifugal Hot Oil Pump because—It has a continuous non-pulsating, uniform flow; no surges.—One simple pumping element; no valves.—Direct connected prime mover; no gears.—Ample clearance between moving and stationary parts; no rubbing surfaces to wear or freeze.—Requires small floor space; no costly foundations.—Smaller first cost; no big investment.—Maintenance cost is less; no big repair bills.

BYRON JACKSON PUMP MANUFACTURING CO. Inc.
FACTORY AND MAIN OFFICE: BERKELEY, CALIFORNIA
BRANCHES: SAN FRANCISCO, LOS ANGELES, VISALIA, PORTLAND, OREGON, SALT LAKE CITY

BYRON JACKSON

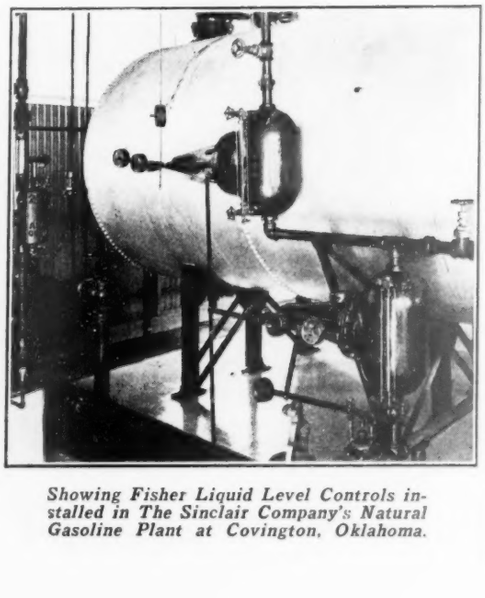
SINCLAIR OIL AND GAS COMPANY
GASOLINE DEPT.- PLANT No 6
SINCLAIR OILS
SINCLAIR OILS
The Largest Natural Gasoline
Plant in the World
Located in the Covington-Garber Field
Garfield County, Oklahoma

"OPEN SESAME" Never Fails—

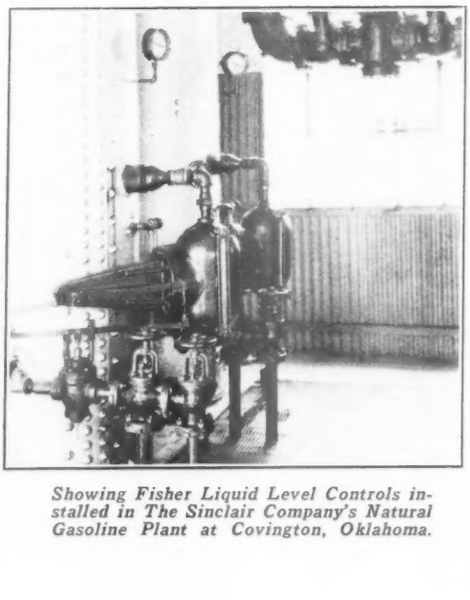
When used by a rising liquid in a Fisher Regulator.

The ancient charm that opened caves in "The Arabian Nights" frequently was of no avail, but the quality that is a part of Fisher equipment assures a rising liquid that it will always leave when it grows big enough.

The illustrations show part of the equipment in the Sinclair Company's Natural Gasoline Plant at Covington; Sinclair calls on Fisher to maintain levels of gasoline in Sinclair's accumulator and run-down tanks and to allow only gasoline to enter their receiving tanks. Nothing is left to the chance power of a charm.



Showing Fisher Liquid Level Controls installed in The Sinclair Company's Natural Gasoline Plant at Covington, Oklahoma.



Showing Fisher Liquid Level Controls installed in The Sinclair Company's Natural Gasoline Plant at Covington, Oklahoma.

FISHER
TRADE MARK
REGISTERED

THE FISHER GOVERNOR COMPANY

384 FISHER BLDG.
MARSHALLTOWN, IOWA

Operating the Largest Gasoline Plant

No. 6 of the Sinclair Oil & Gasoline Co. Has Many Interesting Features. Co-operates with Production Department

By C. O. Willson

The No. 6 plant of the Sinclair Oil & Gas Company, located in the Garber-Covington Field of Oklahoma, is a notable contribution to the art of manufacturing natural gasoline from gas obtained in the production of crude oil. Located in a field which several months ago furnished the industry's largest high gravity well in the No. 27 Hartley and which also has more producing sands than any other field in Oklahoma, the plant fits in well with its unusual surroundings.

In the first place it is the largest single plant of the natural gasoline industry both from the standpoint of gas capacity and gasoline output. Up to the past two or three years small units scattered over the fields were believed to be the most feasible method of manufacturing natural gasoline under all conditions. Even up to the present time the industry considered as a unit has not got very far away from this original idea indicated by the fact that approximately 1,200 plants now in operation in the United States have an average capacity of a little over 4,000 gallons daily.

The Sinclair plant—the exact location of which is the SW of NW, Section 19-22-3, 5 miles northeast of Covington—is handling 40,000,000 feet of gas daily with a gasoline output of approximately 80,000 gallons. With very little additional equipment this output can be boosted to 100,000 gallons daily. It is possible that this production will materialize before the end of the year.

Industry's Largest Plant

The significance of this large output of a single plant is apparent when comparison is made with other developments in the manufacture of motor feuls. The 80,000-gallon output of this one plant is approximately three times as great as the total output of all the natural gasoline plants in the United States 15 years ago. The total production of 132 natural gasoline plants in 1911—the first survey made by the Government—was 7,426,000 gallons for the year. This is less than the assured output of the Sinclair plant during the remainder of this year.

Natural gasoline output increased rapidly after its commercial beginnings in 1910, but as late as 1913 the total production was only 24,061,000 gallons and this is less than the yearly output of the Sinclair plant, based on present operations. Considering the estimated consumption of all gasolines in 1913, the Sinclair plant, had it been operating then, would have furnished approximately 2 per cent of the motor fuel supply of the United States during that year.

It is not necessary to consider only the past to appreciate the size of the plant. Its present production is equivalent in volume to the output of a 4,000-barrel refinery with skimming and cracking equipment from which a yield of 50 per cent gasoline is being obtained.

Its real importance as a motor fuel supply is not realized, however, until the output is considered from the standpoint of its value as blending material. As everyone connected with the manufacture and marketing of motor fuels knows, natural gasolines are used primarily to blend with refinery products so as to obtain gasoline meeting the specifications of domestic and export buyers. The amount of natural gasoline used varies with the specifications of the product with which it is to be blended and the finished product desired.

Figured on a basis of a 15 per cent blend of natural gasoline it is apparent that the Sinclair plant makes possible a gasoline supply of 535,000 gallons daily. This, based on average requirements in previous years, furnishes all the gasoline required by 350,000 automobiles and trucks. This gasoline is approximately equivalent to the daily consumption of such states as Georgia, Nebraska and Louisiana.

Modern Plant

The plant is also of interest because it emphasizes the importance of modern equipment and methods in gasoline manufacture. Up to a year ago the plant belonged to the compression type. This type equipment is not obsolete and is still an efficient method of manufacture in many fields where different operating conditions exist.

When additional gas became available in large quantities about a year ago the management decided to change to the oil absorption type. Without a shutdown this change was made resulting in an increase in capacity from 25,000 gallons daily to 80,000 gallons daily.

The first two compressor units were installed in May, 1919. In 1920, four units were added, and in January, 1923, five more. These 11 units were operated as a compression plant until August of last year. Then four more units were added to handle flush gas production from the field. At that time it was decided to change from the high compression to the low compression absorption method. In rebuilding and enlarging the plant two units at a time were changed from the high to the low compression. With the absorption and distillation units already installed, it was possible by this method of changing, to keep the plant in constant operation.

Thus the plant illustrates the transition which has taken place in recent years in which the industry has changed from the original compression type of manufacture so that now the bulk of natural gasoline is produced by the oil absorption method.

New Features

It is needless to state that the plant which is described in detail in the following pages differs in appearance and method of operation from the smaller plants usually associated with gasoline manufacture. In the past the natural gasoline departments of the major oil organizations have usually been considered as orphans of the crude production departments.

The primary purpose of the crude producing branch was naturally to produce oil and the natural gasoline department was given whatever was left in time, equipment and labor and allowed to shift for itself as long as it did not interfere with production operations. Major companies have come to realize, however, that this makeshift arrangement between the crude production and natural gasoline divisions, is unfair to both. As a result the natural gasoline activities are now under the direction of a separate division the same as in refining.

All the natural gasoline plant operations of the Sinclair Oil & Refining Company, which includes several plants in the Mid-Continent in addition to the No. 6 Garber, are under the supervision of a separate division headed by H. B. Bernard, a vice president of the company.

So far as the No. 6 plant is concerned, it resembles a modern refinery with all construction features of a permanent nature. Homes for employes and attractive landscaping are other features which emphasize the difference between past conditions in gasoline manufacture and the new as represented by the Sinclair plant.

Aiding Production Department

Although separate in their operations there is such a close co-operation between the two divisions as to make the Sinclair operations in the Garber Field of especial interest to the producer of crude oil as well as the gasoline manufacturer. This is due to the use of gas by the production department in boosting the production of settled wells.

No attempt will be made here to describe the several methods of using residue gas from the natural gasoline plants in the production of crude oil. That is a new development of concern primarily to the production engineer. It is rapidly passing the experimental stage, however, and in the opinion of many investigators will soon have a wide application.

It is an important development to the gasoline

General view of the No. 6 natural gasoline plant of the Sinclair Oil & Gas Company located in the Garber-Covington Field of Oklahoma

Crane equipment for oil and gas pipe lines

No. 760-D

One of a group of cast steel screwed fittings with long thread lengths. Tested at 800 pounds hydraulic pressure. This pattern is made for casting in steel and should not be compared with cast steel fittings made from ordinary cast iron patterns. See Catalogue 51, page 407.

No. 260-D

One of a group of cast steel fittings for oil vapor pressures up to 550 pounds, temperatures to 900°F., and cold oil, gas and water working pressures up to 2000 pounds. See Catalogue 51, page 407.

No. 754

Double disc gate valve, 700 pounds test. Discs are guided accurately in the body. Ferrosteel body and bonnet. Stems are of Crane stem metal, high grade manganese bronze of over 50,000 pounds tensile strength. Body rings are of Crane Steam Brass. See Z sheet 2070-A.

No. 343-E

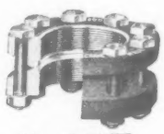
Double disc gate valve, ferrosteel 1000 pounds test. Discs are accurately guided in the body. Inside wedging mechanism is brass to iron. Accurate machining reduces friction in all sliding parts. Supplied with screwed or flanged ends, in outside screw and yoke or non-rising stem patterns. See Z sheet 2071-A.

No. 215-H

Double disc gate valve, 1600 pound test, for oil, gas or water. Ferrosteel body, bonnet and discs. Discs are guided accurately in the body. Screwed end valves are tipped for lead. Outside screw and yoke or non-rising stem patterns can be supplied. See Z sheet 2072-A.

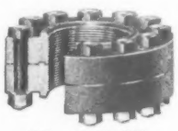
No. 266-E

Heavy pattern malleable iron cross fitting, made in ¼-inch to 16-inch sizes. Particularly adapted for exacting requirements of the oil industry. Long thread lengths and heavier bands than commercial fittings. For use on high pressure cold oil, gas and water lines. See Catalogue 51, page 339.



No. 245-H

Heavy pattern malleable iron flange union for oil working pressures up to 800 pounds. For use on high pressure cold oil, gas and water lines. Ground-joint seat and exceptionally long threads. See Catalogue 51, page 339.



No. 247-H

Ferrosteel hydraulic flange union; tongue and groove. Good for cold oil, gas or water pressures up to 1000 pounds. Suitable sizes for all oil, gas and water purposes. Gasket is extra with this type. See Catalogue 51, page 340.

No. 830-D

All steel ground joint flange union for hot oil working pressures up to 600 pounds and temperatures to 750°F.; 550 pounds at 900°; cold water, oil or gas working pressures to 1000 pounds. Available in sizes from 1¼-inch to 12-inch inclusive. See Z sheet 2094.

Cast steel distributing header

Manifold headers will be made to your order with any number of outlets, according to your special requirements. The fitting illustrated here is supplied in cast steel, ferrosteel, or cast iron, with either flanged or screwed ends. See Z sheet, page 18.

Learn more about these materials backed by 71 YEARS OF EXPERIENCE. Write for complete set of Z sheets, and a catalogue covering the particular division of the oil industry in which you are interested.

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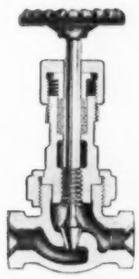
For casing head gasoline and carbon black plants

No. 354½

Cast iron body globe valve, with union bonnet. Renewable Nicalloy disc and seat ring where quick repairs are desired. Wheel, bonnet, bonnet ring and stuffing box nuts are of malleable iron. Steel stem. See Catalogue 51, page 123.

No. 1504

An all-iron globe valve for working pressure up to 300 pounds. Ferrosteel, with special metal disc rings rolled into the discs. Plated steel stem. The deep stuffing box can be repacked when the valve is wide open. See Catalogue 51, page 505.



No. 1504½

All-iron body regrinding globe valve with screwed ends. Ferrosteel; cold rolled steel stems. Malleable iron union ring. This valve has a long, tapering plug seat which can be reground. See Catalogue 51, page 505.

No. 341-E

Double disc flanged gate valve, 1000 lb. test. Body, bonnet and disc are of ferrosteel. Discs are accurately guided in the body. Crane special brass trimmings. Drilling-through valves can be supplied from this pattern on order. See Z sheet 2071-A.

No. 465½

Standard iron body solid wedge gate valve. Outside screw and yoke. Flange ends. The seat and disc face are of brass. Stems are of Crane stem metal or cold rolled steel. This valve may be repacked while under pressure. See Catalogue 51, page 151.

No. 1559

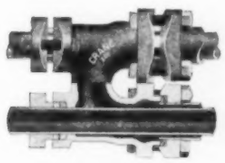
Ferrosteel return bend, with flanged ends, tongue and groove. Furnished with forged steel companion flanges, bolts, and gaskets. For working pressures up to 300 pounds. See Catalogue 51, page 528.

No. 488

All-iron brass mounted clamp gate valve, screwed. May be quickly dismantled for cleaning. This valve is strong and rugged. Can be supplied in the quick opening type. For gas, oil, water, steam, or air. See Catalogue 51, page 160.

No. 484½

All-iron screwed clamp gate valve, with outside screw and yoke. Quickly dismantled for cleaning. In this valve, the outside screw indicates whether the valve is open, partly open, or closed. Especially recommended for use on gas, oil or air lines. See Z sheet 2092.



No. 1575

Ferrosteel double pipe return bend, with companion flanges, glands, bolts and gaskets. So constructed that a bend may be removed, thus permitting a section of pipe to be taken out of any part of the heat exchange or condenser without tearing down entire stand. See Catalogue 51, page 529.

No. 760

One of a group of standard malleable iron fittings for refineries. Long thread chambers. Heavier than ordinary malleable, and will withstand greater strains than cast iron. Good for cold oil working pressures up to 200 pounds. See Z sheet 2053-D.

No. 264-E

Extra heavy malleable iron tee fitting. Having long thread lengths, it needs no lip for lead, or caulking recess. A high grade fitting for hard use. Makes tight joint and will not stretch or crack when piping is made up. See Z sheet 2054-D.

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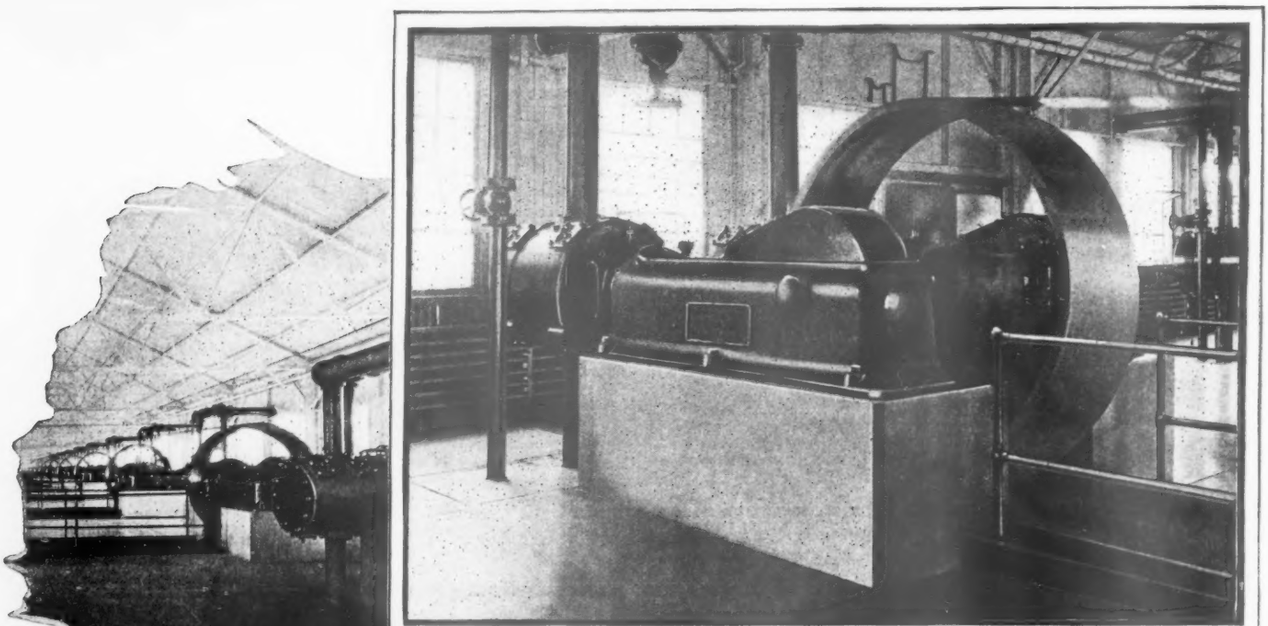

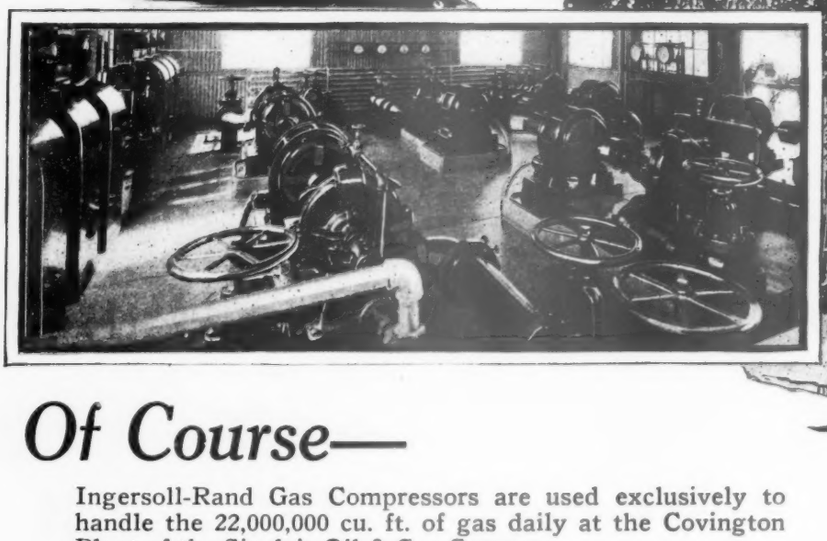

Of Course—

Ingersoll-Rand Gas Compressors are used exclusively to handle the 22,000,000 cu. ft. of gas daily at the Covington Plant of the Sinclair Oil & Gas Company.

Naturally, Cameron Pumps handle the oil, gasoline, and the circulating water.

Then, too, Ingersoll-Rand Pneumatic Tools were used in the construction of this plant.

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manufacturer because it means that provision will have to be made to furnish the producing branch with all the residue gas needed for their operations and also because it will result in a large increase in the rich gas supply. From the standpoint of the natural gasoline industry it simply means a recycling of gas through the plants so as to remove the gasoline picked up by the gas through contact with crude. Based on results obtained in the relatively few applications made of the gas lift principle in the Mid-Continent Field, it is possible that producers will be more concerned in using the gas to increase their crude oil production than in selling the gas for its gasoline content. If this situation develops it is certain that the natural gasoline manufacturer will have to adjust his operations to those of the producer in order to secure the raw material for his plants.

In the Garber Field, the Sinclair plant is now furnishing a large amount of residue gas to the production department with a building program now under way which will greatly increase that phase of the company's operations. This has necessitated the installation of compressors in the field so as to obtain the high pressures necessary in returning the residue gas to the wells. Special provision has also been made to return the rich gas to the plant after it has been used at the wells.

In the following pages the writer describes this phase of the Sinclair operations as it affects the natural gasoline division. The description follows the gas as it is gathered from several sources in the field through the several phases of plant processing ending when the finished gasoline is loaded in tank cars at the loading racks.

Gathering System

The No. 6 plant of the gasoline division of the Sinclair Oil & Gas Company secures its gas supply from all parts of the Garber Field covering an area about 5 miles long and 2 miles wide. Although there are other smaller plants in the field the Sinclair plant obtains the bulk of the gas supply with connections to approximately 325 wells.

Ninety miles of lines are required in the gathering system. The main lines connecting to the plant are 16-inch and 20-inch with 4, 6, 8 and 10-inch lateral lines leading to all points of the field.

The gasoline content of the gas from the wells varies. Some of the flush gas from new wells averages about one-half gallon per 1,000 feet of gas, while 3½ gallons per 1,000 feet are obtained from the settled sand production. The average content of the gas when delivered at the plant from all sources is 1¾ gallons.

Practically every kind of field condition in the gathering of gas is found in the Garber area. The field started as a shallow sand pool. Producing sands were found about every 200 feet from 900 to 2,220 feet. Later, sands at 2,300, 2,700, 3,000, 3,100, 3,700 and finally 4,400 feet were found in different parts of the field.

The deepest sand, discovered in April, 1925, early this year brought forth wells of the gusher type and placed the field among the major producing areas of high gravity crude. The No. 27 Hartley of the Sinclair Oil & Gas Company had a maximum flow in excess of 26,000 barrels for 24 hours, and an average flow of 20,000 barrels daily for 10 days.

These numerous sands are not found in all parts of the field. However, at several points the derrick of wells producing from different depth sands are grouped together as close as operating conditions will permit.

Sources of Gas

With this field condition the natural gasoline division gathers the gas from several sources. Many of the wheels are pumping and in those cases the gas is obtained from the casinghead. This includes the gas traps on all lead lines connected with the pumping.

In the case of flowing wells the gas is obtained from gas and oil separators and traps. Wells in which the residue gas is used as a lift are operated separators. Connection is also made to all stock in the same manner and the gas taken from the tanks which are of the gas-tight type.

The use of gas by the production department has necessitated the erection of compression units in the field. Since this, so far as the natural gasoline plant is concerned, is part of the gathering system, it will be described here.

The first unit used in connection with the gas lift operation was installed at the booster plant, located about 2 miles from the main plant. A 170-horsepower C. & G. Cooper 10½x5½x20 unit was installed. This unit, with a 25-pound suction was capable of delivering 1,200,000 feet of gas daily at 350 pounds pressure. In the initial test, 1,000,000 feet of residue gas was delivered to one of the deep sand producers in the field.

It was found that with the large increase in crude production approximately 1,300,000 feet of gas was returned. This gas which entered the well with a gasoline content of about .02 per cent when returned to the separator had a gasoline content of about 1½ gallons per 1,000 feet. In other words, based on this initial test one well increased the gas supply of the plant over 1,000,000 feet daily from which 1,500 gallons of gasoline was obtainable. The company has since installed three additional Cooper units on the Hartley lease for use in conjunction with the operation of the deep sand wells. One unit is being installed on the W. Kisner lease. C. & G. Cooper equipment is also used in the booster units.

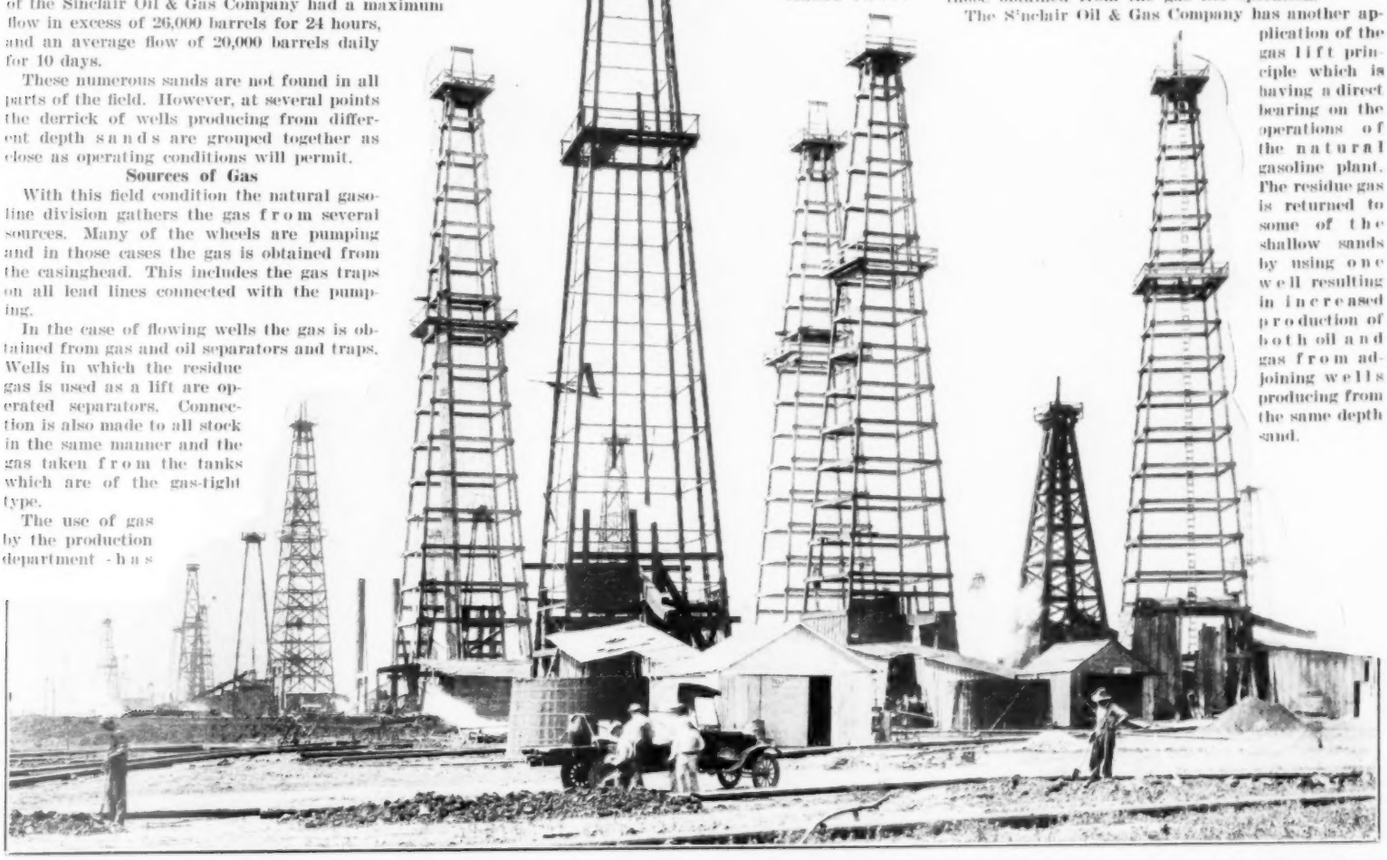
Absorbers in Field

To handle the flush production from the deep sand wells it was found expedient to install four absorbers in the field about 2 miles from the main plant.

With this arrangement the lean oil is pumped to the absorbers from the main plant. After passing through the absorbers the rich oil goes back to the main plant for distillation. These field absorbers fit in well with the gas lift operation. The enriched gas from the wells passes to the absorbers from the separators. The lean gas then returns to the wells for further recycling. The absorbers are located a few hundred feet from the wells in which the gas lift is being used. This does away with the necessity of returning large quantities of residue gas from the main plant and also reduces to a minimum, the gathering system in handling the rich gas from the field.

The gathering system is arranged, however, so if conditions required, both the rich and lean gases could be taken care of at the main plant. The four absorbers in the field take care of gases other than those obtained from the gas lift operation.

The Sinclair Oil & Gas Company has another application of the gas lift principle which is having a direct bearing on the operations of the natural gasoline plant. The residue gas is returned to some of the shallow sands by using one well resulting in increased production of both oil and gas from adjoining wells producing from the same depth sand.



Scene from the field which furnishes the gas supply for the largest gasoline plant. Wells shown are located in the southwest corner of the NW quarter of Section 18 (R. M. Hartley lease). Note the six wells on one location producing from different depth sands. Well with tallest derrick is the No. 19 Hartley, which has produced over a half million barrels of oil with a large volume of gas.

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General Supt. Construction

C. L. Brown
General Supt. Operation

H. B. Bernard
Vice President

E. A. Wooden
Chief Engineer

H. M. Coulson
Asst. Supt. Operation

PHOTOS BY J. L. RIVKIN - TULSA

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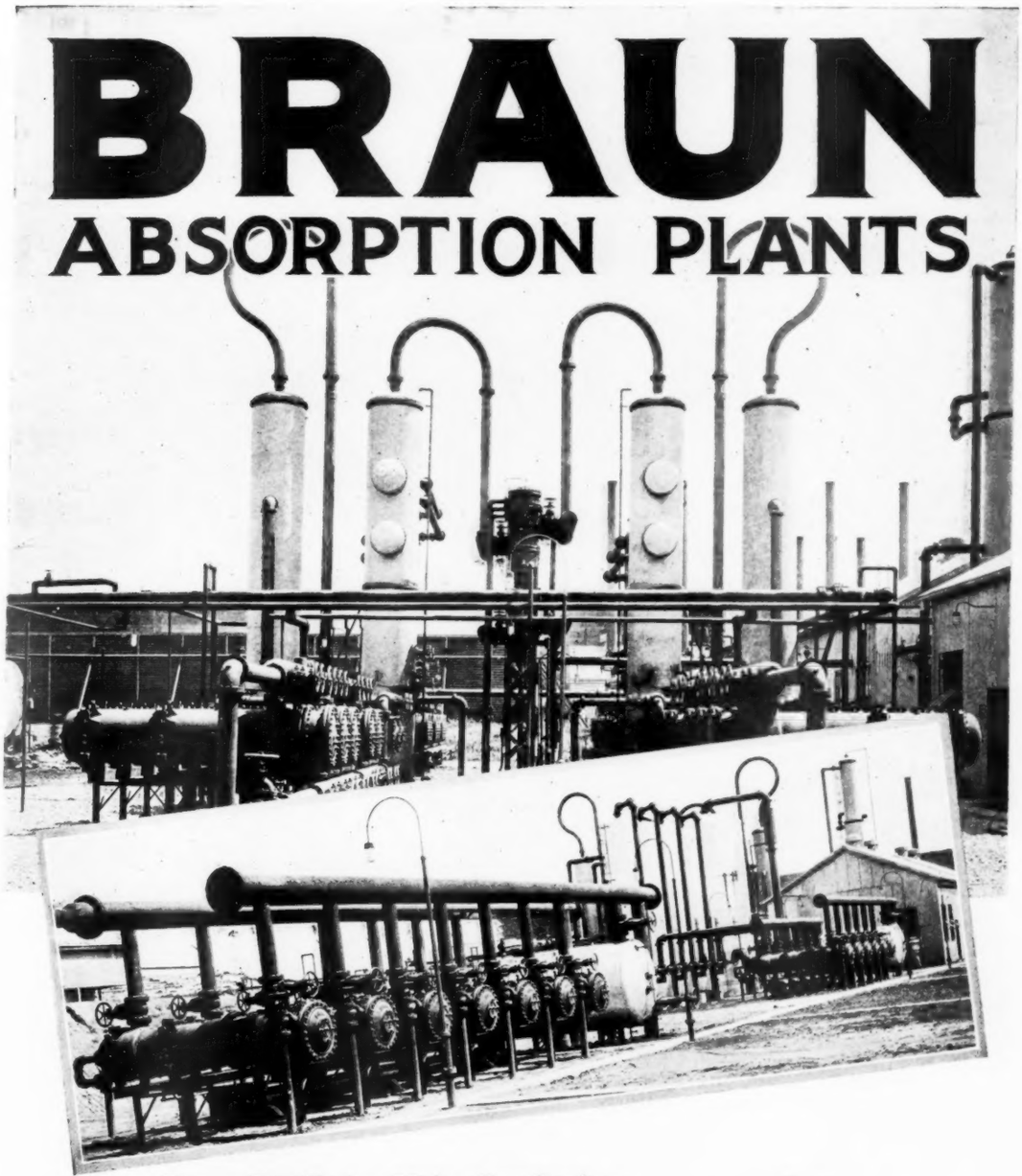

Braun Distillation Units, Gas Coolers, Cooling Towers and accessories in the Sinclair Oil & Gas Company's new absorption plant at Covington, Okla.

C. F. BRAUN & CO.
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Tulsa Alhambra, Calif. Dallas

Engines and Compressors

The gas from the field enters the plant in a 20-inch header connected to four vertical 6 by 10-foot scrubbers of the usual design. The header is arranged so that equal amounts of gas pass to each scrubber. From the scrubbers the gas passes through two 20-inch orifice meters.

From the meter the gas enters another 20-inch line extending the entire length of the compressor building. The gas is taken up by six Ingersoll-Rand low pressure booster pumps. These compressors are driven by six 165-horsepower 4-cylinder Foos engines. These engines are the 4-cycle Type V verticals.

The gas is then discharged into seven Braun type I coolers. By water circulation in these coolers the gas is reduced to atmospheric temperature with a 5-pound pressure.

At this pressure the gas is picked up by nine 18 by 16 Duplex Ingersoll-Rand compressors. These units operate at 175 r.p.m. against 35 pounds which is the operating pressure of the plant. The same type Foos engines as used with the low compression units are connected to the nine compressors. Foos equipment was installed when the first units were built seven years ago and all subsequent units purchased were of the same type. No replacements have been necessary with the Foos equipment. The same situation applies to the Ingersoll-Rand equipment. The compressors as shown in the accompanying illustrations are driven with 18-inch, 32-ounce heavy double leather belts. They discharge into a battery of six Type I Braun coolers.

In addition to the Ingersoll-Rand and Foos equipment four compressors of another type are in operation in an adjoining building. These units have 16 by 20 cylinders with the same operating conditions. These units discharge direct from the gas coolers to the absorbers.

This equipment was installed to handle the large flush gas supply which became available when the new deep production was discovered about a year ago. They are now a part of the permanent equipment.

The structural steel building which houses the engines and compressors is 55 by 384 feet, and is one of the largest industrial buildings in Oklahoma. Neatness which is apparent throughout the entire plant, is especially evident in this building. The concrete floors are painted and every precaution taken to prevent accumulations of dust. The plant has a complete system for the circulation of lubricating oils. The oil is available at taps at several points in the engine and compressor room. This simplifies the work of the operators and does away with the necessity of having unsightly drums and other containers at different points in the plant.

In the main building there is also one Cross compound steam driven compressor. This unit was formerly used as an expander compressor.

Absorption Division

The absorption division of the main plant consists of four 5 by 24 foot Newton absorbers, which handle the bulk of the gas supply. In addition the company has four 6 by 24-foot absorbers, located 2 miles north of the main plant. These absorbers were built by the Tulsa Boiler & Machinery Company.

The four field absorbers were installed as previously explained to handle flush gas production from the deep sand producers. The lean oil is pumped from the main plant to the absorbers. Well pressure was sufficient to secure excellent results in absorbing the gasoline from the gas. Booster units now furnish the desired pressure. The rich oil after leaving the absorbers is returned to the main plant where it is distilled in the same manner as the oil from the other absorbers.

This arrangement for handling flush gas production is somewhat unique. The Sinclair management believes it has several advantages over portable plant installations which are now being widely used to handle the flush gas in a new producing area. Only a few days were required to lay the lines connecting the main plant with the absorbers which were also quickly installed. The four absorbers have a capacity of approximately 20,000,000 feet of gas daily. Several portable units would ordinarily be required to furnish the same capacity. It is of course necessary in an arrangement of this kind to have a main plant within a few miles of the flush gas production.

As was explained in the discussion of the gathering system, these field absorbers are now used to handle the gas from surrounding wells the residue gas being returned to drilling wells and those in which the gas lift is being used. The field absorbers also take care of gases from stock tanks. A low pressure gas booster has been installed to furnish the pressure necessary to handle the stock tank gases.

At the main plant the flow of gases to each absorber is regulated by means of meters and valve controls. The gas enters the absorbers from a common header. After the lean gas leaves the absorbers it passes from the absorption unit by means of back pressure valves which automatically maintain a constant pressure of 35 pounds on the absorption and compression systems.

The fat or rich oil leaves the absorbers through twin batteries of Type K Braun heat exchangers. There are 10 of these heat exchangers in parallel batteries of five each. After this heat exchange with the lean oil from the distillation units the rich oil from each exchanger battery passes to two Type I Braun preheaters in series. These preheaters are steam heated. The temperature of the rich oil as it leaves the preheaters is automatically maintained by regulating the steam flow. From the preheater the rich oil goes to the stills for the distillation process.

Two Distillation Batteries

The distillation division as shown in the accompanying photos is divided into two batteries which are operated separately up to the point where the vapors are condensed. The oil is pumped from the preheater to the still by a hot oil centrifugal pump connected to a 75 G. E. poliphase induction motor, having a capacity of 350 g.p.m. against 150 pounds to the square inch.

Each battery of preheaters discharges into a 4 by 30-foot Braun still into which live steam is introduced at the rate of about 1 pound per gallon of gasoline. The stills are of the hurdle type. The vapors pass out at the top of the stills through the 8-inch vapor line. The goose necks take care of expansion.

The vapors enter the bottom of the towers adjoining the stills. These towers provide for two stage dephlegmation. The hot lean oil from the stills first passes through the heat exchange system and then to a water-cooled Type K Braun precooler.

This cooled oil then passes to the first dephlegmator of the tower where heavier ends of the vapor are knocked back as reflux to the bottom of the tower. The light ends of the oil and heavy ends of the gasoline are condensed at this time. From this dephlegmator the lean oil passes through a second precooler and then to the second dephlegmator of the tower. This gives the final control of the finished gasoline. Through instruments which automatically control the flow of the oil through the dephlegmator, the endpoint of the finished gasoline is accurately regulated.

This two-stage dephlegmation gives a sharp cut between the oil and gasoline assuring a gasoline without the undesirable heavy ends and at the same time permits all the desired fractions to come over in the one operation. The reflux in the bottom of the tower consists largely of absorbing oil and water. An automatic level control in the bottom of the tower secures the separation of the water and oil. The water passes to the hot well and the oil returns to the oil circulating system.

After the lean oil leaves the second dephlegmator it passes through four final coolers. The oil at this time is reduced 5 degrees Fahrenheit below the dry bulb temperature. However, during cold weather the oil is not cooled below 75 degrees Fahrenheit, as that has been found to be the best operating temperature. From these coolers, the lean oil returns to the absorbers where the cycle of operation again starts.

The method of controlling the endpoint at the second dephlegmator is of especial interest. The rate of flow through the dephlegmator as previously explained is automatically regulated. This is accomplished by an arrangement which makes possible the by-passing of the oil around the dephlegmator in any amount necessary to maintain a predetermined temperature in the vapors leaving the tower. A Foxboro recording control thermometer maintains this uniform temperature within 1 degree Fahrenheit.

It will be noted from the above description that practically every phase of the distillation division is automatic in its operation. Due to that fact only one operator per shift is required to handle both the absorption divisions. A separate gauge board is provided for the distillation unit. This is located between the towers of the two batteries. This board contains recording control thermometers for both the fat and lean oils, the still temperature and the temperature of the gasoline condensate.

All recording instruments are supplemented with engraved steam glass thermometers which are inserted in wells. These wells are found at different points in the preheaters, heat exchangers and precoolers so as to enable the operator to keep a close check on all phases of the plant's operation.

Condensers and Water System

The condensing equipment is another illustration of compactness in design, the outstanding characteristic of the absorbing and distillation divisions. All the vapors from both stills are condensed in six Type I Braun vertical condensers. The vapors with some steam come over from the towers in a goose neck vapor line and discharge into the condensers.

The condensed steam and water then pass to pressure drums in the receiving house. Here the gasoline is automatically drawn off at the top passing to pressure storage tanks. The water is automatically drawn off at the bottom and returned to the water circulating system.

The vapor outlets of the receiving tanks are connected to the vapor system of the distillation system in such a manner that back pressure valves maintain a constant pressure on the entire distillation system. Provision is made so that in the event the pressure on the storage tanks exceeds the receiving tank pressure a steam pump automatically

You Will Find Crawford Regulators Installed on All Gas Engines in the Gasoline Plants of the Sinclair Refining Company in the Mid-Continent Field

This Company, like many others, interested in securing the utmost in gas economy and efficient engine operation, has standardized on Crawford Regulators.

These regulators stabilize the pressure, make possible remarkable savings in gas consumption, eliminate all possibility of leakage and enable the engines to operate continuously.

Ask the nearest Emco representative about the Crawford—he will give you all the facts.

EQUITABLE METER and MANUFACTURING CO.

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F. C. Millard Engineering Co.,
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Northwest Gas & Equipment Co.,
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Parson Sales & Engineering Co.,
221 Underwood Building,
San Francisco, California

starts operating forcing the gasoline into the storage tanks.

The pressure storage at the present time consists of 10 by 40-foot horizontal tanks. These tanks are covered with a frame building as shown in the accompanying photo. All these tanks have glass gauges to determine the liquid levels.

Water System

The water supply and method of handling is always a noteworthy feature of any natural gasoline plant and with a plant the size of the Sinclair, it is of especial interest. The plant at the present time requires about 6,000 barrels of water daily. This will be reduced to 4,000 barrels daily during the winter months.

In addition to the natural gasoline plant, large quantities of water are necessary in connection with the production operations of the company. A recent project completed on the Hayes farm is expected to furnish 25,000 barrels of water daily. This water is being pumped by two Dean-Hill six-stage centrifugal pumps connected to a Foos Type V, 2-cylinder, 4-cycle engines.

The water delivered at the natural gasoline plant is first treated before being used in any phase of the plant's operations. The water is treated both hot and cold with hydrated lime while in agitation. The settling is done by a coagulant.

The batch system is used in treating the water. Four 1,000-barrel tanks are in constant use for this purpose. While one tank is being filled, a second is being agitated while the third and fourth are settling. This treating process requires very little extra labor due to the float controls of the tanks and the automatic arrangement for handling the lime.

The old compression plant had two spray ponds, one being used for engine circulating water and the other for gas coolers. The present plant continues to use both ponds in the same manner. In addition a Braun cooling tower with a capacity of 3,500 gallons of water per minute has also been installed. This tower is one of the largest in the United States.

The engine water is pumped by four 4-inch Type S. V. Cameron belt centrifugal pumps. The water used in the distillation system is pumped by three 1,500 g.p.m. Cameron centrifugal pumps, each driven by 60-horsepower G. E. poliphase motors. In this connection the motors both for the oil and water pumps have automatic starting compensators with attached ammeters. The motor-driven and belt-driven centrifugal pumps are so connected that water can be supplied by either system.

Fire System

Both water supplies are hooked into the plant's fire protection system, one of the most elaborate the writer has ever seen at a gasoline plant. This fire system makes a loop around the entire plant with cross connections through the center. Hydrants are located at convenient points. The fire protection also extends to the homes and dormitories of the men. A hydrant being placed between every second house.

In addition to the water system the plant has two chemical engines. All plant buildings are equipped with one and two-quart extinguishers. All equipment was installed in accordance with the rules and recommendations of the fire underwriters.

All the fire equipment is thoroughly inspected once a month and a report made. New employes are given instructions in the use of the fire apparatus.

Boilers and Other Features

The steam supply at the plant is generated by a battery of five Casey-Hedges Scotch Marine boilers with Dutch ovens and a battery of four Kewanee boilers of the locomotive fire box type, with 175 pounds working pressure. These boilers are fed water at 190 degrees Fahrenheit, by two Gardner-Duplex plunger packed feed pumps. The boiler water consists of return condensate from various parts of the plant and hot make-up water. The feed to the pumps is held at a constant pressure by automatic control valve in feed water tank. Copes Feed Water Regulators maintain a constant water level in the boilers. Another automatic operating feature is the Chapman-Fulton fuel governors which regulate the gas flow to the burners based on changes in steam pressure.

The boilers are protected by Lagonda automatic non-return valves which open or close when a boiler is put on or taken off the line. With this arrangement when a boiler is to be cleaned, it is automatically taken off the line when the fire is cut and steam drops below a certain pressure. In the same manner after cleaning the boiler gets back on the line.

The steam from the high pressure boilers is metered to the stills and is otherwise used in preheaters and pumps including the steam-driven compressor in the engine room. From the preheaters the steam is returned to feed water tank through Nicholson traps.

Two additional low pressure boilers are used to furnish steam for the water treating system and storage. During the winter months, heat for the entire plant can be furnished either by the low pressure boilers or condensate from the preheaters.

Treating Equipment and Laboratory

The treating equipment and laboratory of the Sinclair is not as extensive as might be expected considering the large output. The gas in the Garber Field regardless of the source from which it is obtained has a minimum of impurities. Due to that fact the finished gasoline passes the corrosion and doctor test without treatment. The finished product is a high gravity, and recovery and low vapor tension product.

This situation in regard to the gasoline naturally minimizes the amount of laboratory equipment required. The laboratory, however, keeps a constant check on all phases of the plant's operation. A complete distillation test is made of each car shipped to customers.

Part of the output is transported by pipeline to a refinery located at Enid, Okla., a distance of 16 miles. The bulk of the gasoline is shipped to refineries of the Sinclair Refining Company, located at Coffeyville and Argentine, Kans., East Chicago and Houston, Tex. A 30-car loading rack is located on the Frisco Railroad about 2 miles from the plant. All the tank cars are regularly inspected.

A large warehouse and machine shop is maintained at the plant. This furnished equipment for all general operating and maintenance work at the plant.

Power Plant

In the near future the company will have its own power plant. Three 250-horsepower 6-cylinder Foos vertical engines are now being installed. These will be connected to 219 K. V. A., G. E. generators with direct connected exciters, and furnish current not only for the gasoline plant operations but also for the production department, camp and shops.

Pump House

The water and oil pumps have been previously mentioned. All the pumps are located in the pump house. The 1,500 G. P. M. Cameron water pumps are connected with 60-horsepower motors. The three 850 G. P. M. oil pumps are connected to 75-horsepower motors. Stand-by units are provided for both oil and water circulation.

The meters shown in the background of the pump house measure the oil to the plant absorbers at the plant and the absorbers in the field. The gauges in the rear show the pressure on the four oil headers. The equipment on the left house the automatic starting compensators with attached ammeters for both batteries.

Hot Well

The hot well catches the water from engines and the compressors. Also the trap water from the rectifying column. The hot well water goes to the boilers to furnish make-up water and the balance is cooled in the spray ponds for circulation in engines and compression.

Care of Employes

One of the outstanding features of the Sinclair plant is the provision made for the care of the employes. The management believes that best results are obtained where employes are provided homes and surroundings as complete and attractive as those found in towns and cities. Living conditions in the fields such as the Garber area are usually unsatisfactory unless the oil companies take it upon themselves to overcome this condition.

All married employes of the company are furnished four and five-room modern homes. These homes are complete including garages and concrete sidewalks. For the other men dormitory buildings are provided with a permanent boarding house. A bunk house with modern facilities is provided for the casual employes.

Every effort is made to make the yards as well as the homes attractive. As shown in the accompanying illustrations a large number of trees have been set out around the employes' homes. Grass has been planted with water available to assure green lawns during the summer months. All roads are hard surfaced.

The same plan is carried out around the plant. Concrete walks are found connecting all the buildings and points where employes pass in operating the plant. Grass is found wherever operating conditions will permit.

Part of a solid train load of 33 tankers of natural gasoline en route from Covington to Sinclair's refinery at Sinco, Tex.

The Sinclair Natural Gasoline Plant No. 6, Covington, Okla., World's Largest Gasoline Plant

Power Piping

FOR EVERY OIL FIELD NEED

Sinclair

is acquainted with Power Piping Co. service. Like many prominent concerns in the oil field Sinclair knows that whether it is a pipe bend or a complete piping system, this dependable, experienced company can be entrusted with the task.

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We invite correspondence relative to particular piping problems.

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O. K. SUPER OIL-WELL CEMENT is consistently making new friends and keeping the old. For every type of high-speed oil field construction work—you may depend on this cement. The trade-mark **"O.K."** is your surety bond of satisfaction. Remember, that it hardens quickly and in its durability it is almost everlasting.

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Super Oil-Well CEMENT

WE feel that there can be no greater endorsement of **O. K. PORTLAND CEMENT** than the fact that at the world's largest gasoline plant at Covington—that of the Sinclair Oil & Gas Company—this cement is used exclusively.

For additional information see our nearest dealer or write us direct

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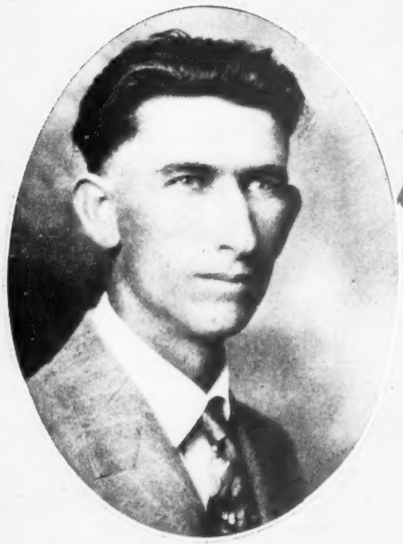
Plant No. 6 Construction and Operation Officials

B. C. Sharrett
District Supt.

V. H. Jones
Mechanical Supt.

J. B. Rowland
Resident Construction Engineer



J. L. Gallagher
Distillation Supt.

H. E. Baugh
District Gas Tester

The Gutters Ventilators Spouting

used on the Sinclair Gasoline Plant were furnished by us.

Ask Us Why

OUR SPECIALTIES

BYRNE

VENTILATORS REVOLVING AND STATIONARY

GASOLINE COOLING TROUGHS

METAL CLAD DOORS

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SKYLIGHTS FOR CORRUGATED IRON ROOFS

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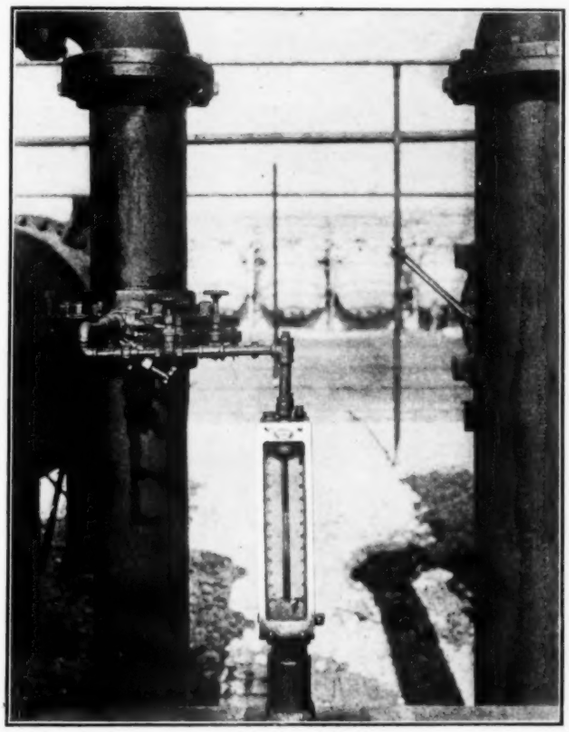
Home of the "Byrne" Stationary and Revolving Ventilators

Partial List of Equipment in Covington Plant

Absorbers—
Newton Process Mfg. Co.
Belting (Leather)—
Grafton & Knight.
Sikes Belting Co.
Boilers—
Casey Hedges Co.
Buildings—
Industrial Construction Co.
Cement—
Oklahoma Portland Cement Co.
Compressors—
Ingersoll-Rand Co.
Compressors (Air)—
The Rix Co., Inc.
Cooling Tower—
C. F. Braun & Co.
Condensers—
C. F. Braun & Co.
Couplings—
S. R. Dresser Mfg. Co.
Engines—
Foos Gas Engine Co.
Expansion Joints—
Ross Heater & Mfg. Co., Inc.
Firebrick, Plastic—
Betson Plastic Firebrick Co.
Fire Extinguishers—
Foamite-Childs Corp.
Pyrene Co.
Float Controls—
Fisher Governor Co.
Floor Plates—
Joseph T. Ryerson & Son, Inc.
Flow Meters, Indicating—
The Meriam Co.
Gas Coolers—
C. F. Braun & Co.
Generators (A.C.)—
General Electric Co.
Generators (D.C.)—
Crocker-Wheeler Co.
Heat Exchangers—
C. F. Braun & Co.
Insulation—
Johns-Manville, Inc.
R. V. Aycock Co.
Lubricators—
McCord Radiator & Mfg. Co.
Magnetos—
American Bosch Magneto Co.
Oil, Lubricating & Absorber—
Sinclair Oil & Gas Co.
Pipe Bends—
Power Piping Co.
Pipe Threading Machines—
Landis Machine Co.
Pipe Threading & Cutting Tools (Small)
Toledo Pipe Threading Machine Co.
Pumps, Boiler Feed—
Gardner Governor Co.
Pumps, Centrifugal, Water & Oil—
Ingersoll-Rand Co.
Recording Instruments—
(Gauges, Indicators, Etc.)
The Foxboro Co., Inc.
Regulators, Reducing—
Chaplin-Fulton Mfg. Co.
Regulators, Boiler Fuel—
Chaplin-Fulton Mfg. Co.
Regulators, Feed Water—
Northern Equipment Co.
Regulators, Engine Fuel—
Equitable Meter & Mfg. Co.
Spark Plugs—
Stitt Ignition Co.
Stills & Rectifying Columns—
C. F. Braun & Co.
Tankage—
Black, Sivalls & Bryson.
United Iron Works.
Tulsa Boiler & Machine Co.
Transmission Equipment—
Dodge Manufacturing Co.
Valves & Fittings—
Crane Co.
Valves, Water Relief—
American Schaeffer & Budenberg Corp.
Valves, Quick Opening—
D. T. Williams Valve Co.
Valves, Drip Blow Off—
Homestead Valve Mfg. Co.
Valves, Boiler Relief—
American Schaeffer & Budenberg Corp.
Valves, Back Pressure—
Nielan Schumaker Co.
Ventilators, Gutters, Etc.—
Tulsa Sheet Metal Co.



One of the Type "C" Indicating Flow Meters at our Covington Plant

WESTERN UNION TELEGRAM

Received at 2040 East 9th St., Cleveland, Ohio. Telephone, Cherry 1740

26 AUG 24 PM 1 29

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MERIAM COMPANY CLEVELAND OHIO

WE HAVE EIGHTEEN DASH ONE HUNDRED INCH DIFFERENTIAL TEST MANOMETERS AT OUR COVINGTON PLANT METERING OIL GAS AND WATER

SINCLAIR OIL AND GAS CO BY H B BERNARD..

Above telegram refers to the Meriam Type "C" Indicating Flow Meters

A Meriam Type "C" Indicating Flow Meter is a differential meter, simple in construction and easily read. Will show accurately the flow of Oil, Gas or Water. Well built to withstand high pressures. Easily Installed. Low in Cost. Order through your Supply House or direct from

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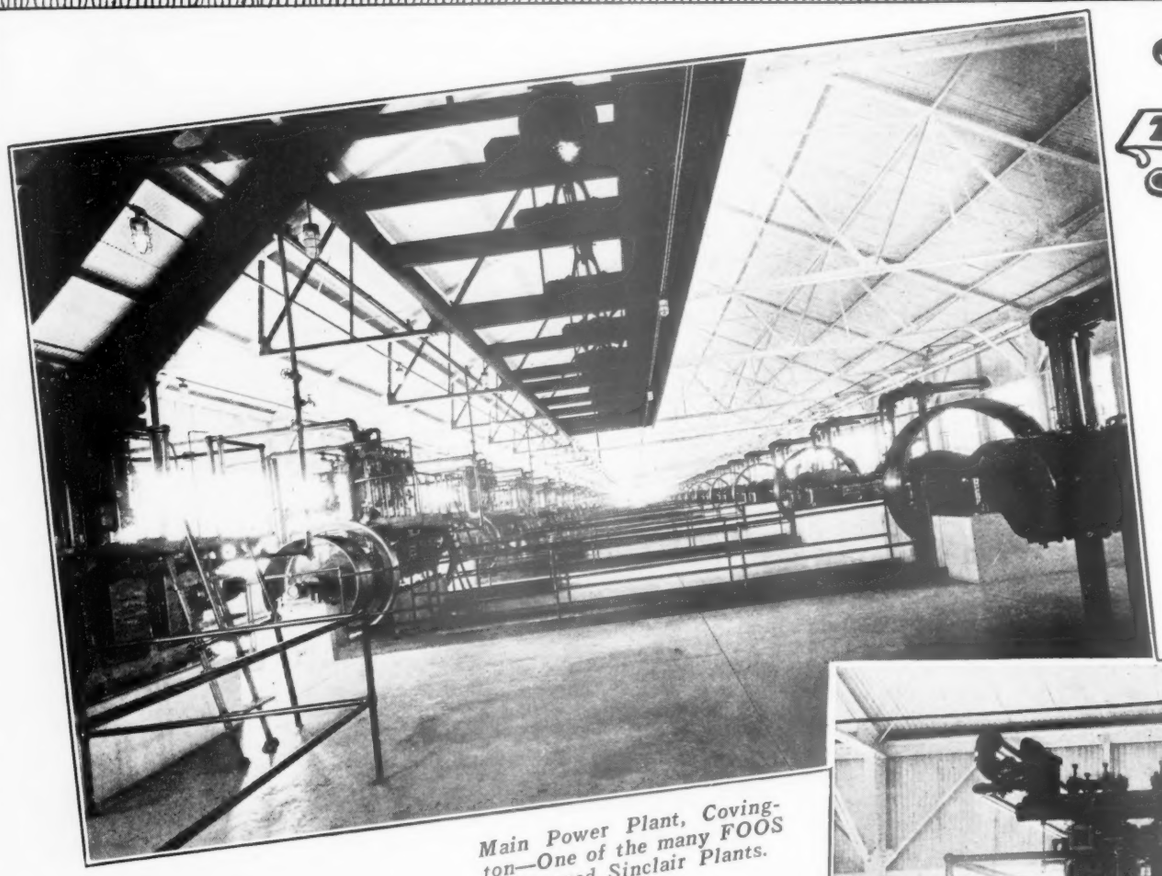

Main Power Plant, Covington—One of the many FOOS Powered Sinclair Plants.

THE FOOS

THE High Qu
be no better
this characterist
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It is the log al r
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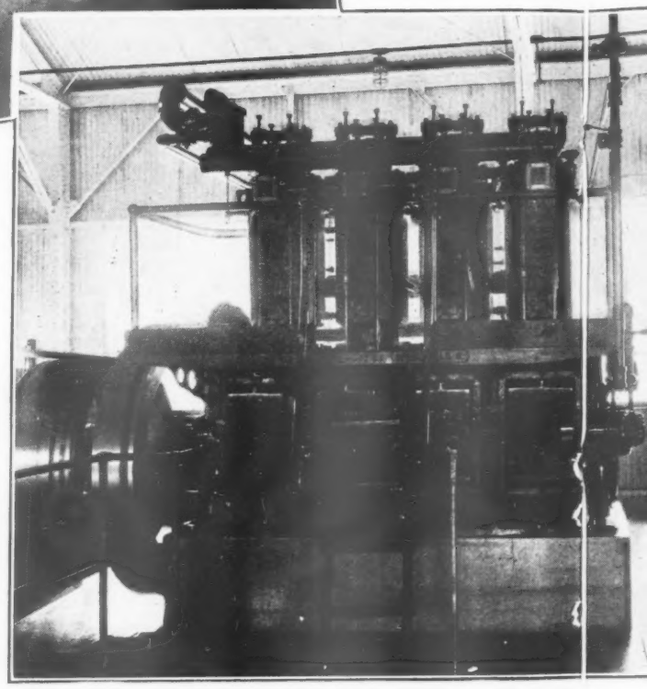
One of the Covington En



THE FOOS has proven in many Sinclair plants, that its superior endurance, long life and efficiency, repays, during its year after year of faithful operation, the total power investment many times over. The Covington Plant alone represents 2600 H.P. in FOOS Engines and—

750 H.P. additional for the Covington Plant is now on order.

Note from Mr. Bernard's letter that—Some of the Sinclair Plants have been operating for more than nine years—24 hour-a-day service, 365 days a year—*The equivalent of over 30 years of ten-hour-a-day service.*

That each of these engines develop about 1,420,000 horsepower hours per year.

90 to 128-day non-stop runs are not unusual, an
engines carry a 15% overload without a quiver

The engines are continuously operated light
speed and rated load and at least twenty ye
this service is anticipated—equal to about 60
of ordinary industrial work.

THE FOOS GAS ENGINE CO

For 39 Years Manufacturers of High Quality Internal Combustion

TYPE V GAS ENGINES

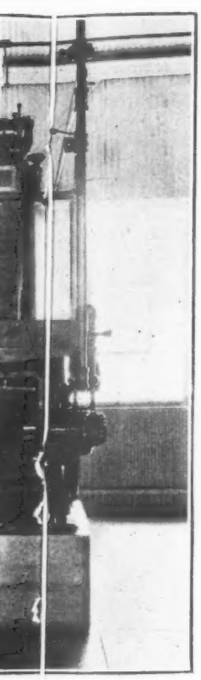
FOOS

Dependability ? ~ask Sinclair!

High Quality of the FOOS can no better demonstrated than by aracteristic experience of Sin-

log al result of 39 years exclu- nufacture of High Grade En-

Covington Engines



ust al, and the a quiver.

ed ight up to enty years of bout 60 years

SINCLAIR OIL AND GAS COMPANY

SINCLAIR BUILDING

H.B.BERNARD VICE PRESIDENT

TULSA, OKLAHOMA

July 14, 1926

53-A

The Foos Gas Engine Company
Springfield, Ohio

Gentlemen:

Answering your inquiry relative to the operation of FOOS Units, our first installations of your equipment were put in operation at our Drumright and Shamrock plants in 1917.

Our oldest plants which are #2 at Drumright and #3 at Shamrock have averaged 99.5% operation since their installation nine years ago. The Shamrock Plant has been carrying an overload of 15% and all these units are still running on their original cylinders. Our Burbank Plant #9 containing 8-165's operated 99.83% last month.

Our Covington Plant #6 which contains 15-165's and 1-125 H.P. Units operated during June, 99.63%. These units are driving compressors at 175 RPM against 45# / sq.in. with suction pressure up to 5# at times.

We do not make it a practice to try for long continuous runs but I do recall one run on a unit for 128 days without a miss and there have been several instances of units having operated 90 days with out shut down.

We have never broken or sprung a crankshaft, the wear on bearings is negligible. In general, where we have good water, we are able to operate without grinding valves or other like attention for an almost indefinite period. Our general policy however, calls for complete inspection every six months and a thorough overhaul and cleanup once a year.

All of the equipment we are operating is lubricated with Sinclair Oils and a good share of our successful operation is attributed to this fact. We are easily running 4000horsepower hours per gallon.

I would say that these units require a minimum amount of attention. Our Covington plant, for example, is operated by three men on tour who look after not only the mechanical equipment but the handling, transferring, and loading of the gasoline as well.

These units are running at their rated speed of 285 R.P.M., right up to their ratings, sometimes over, and that our service is twenty four hours a day, 365 days a year with an added day for leap year.

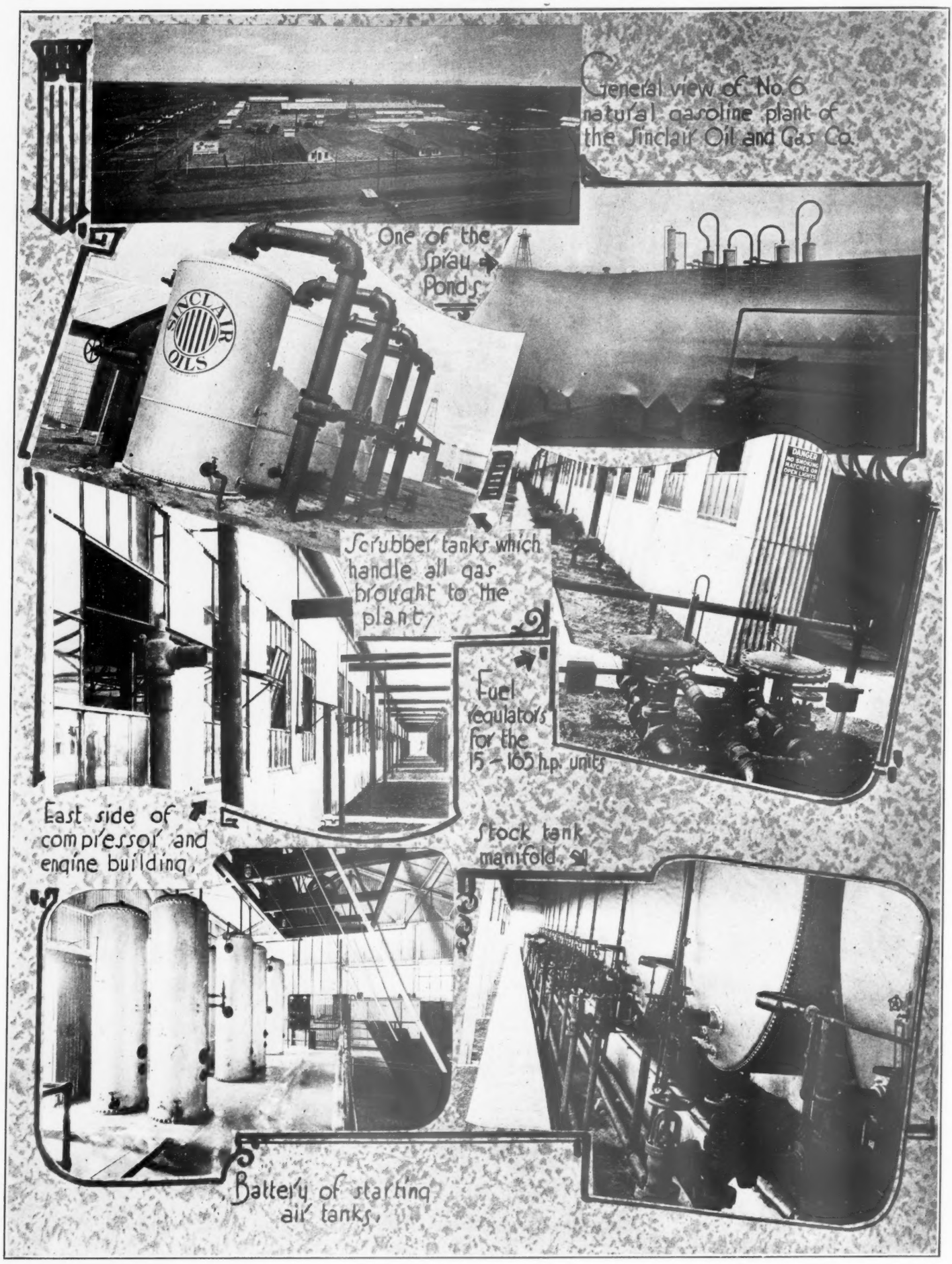
Yours Very Truly

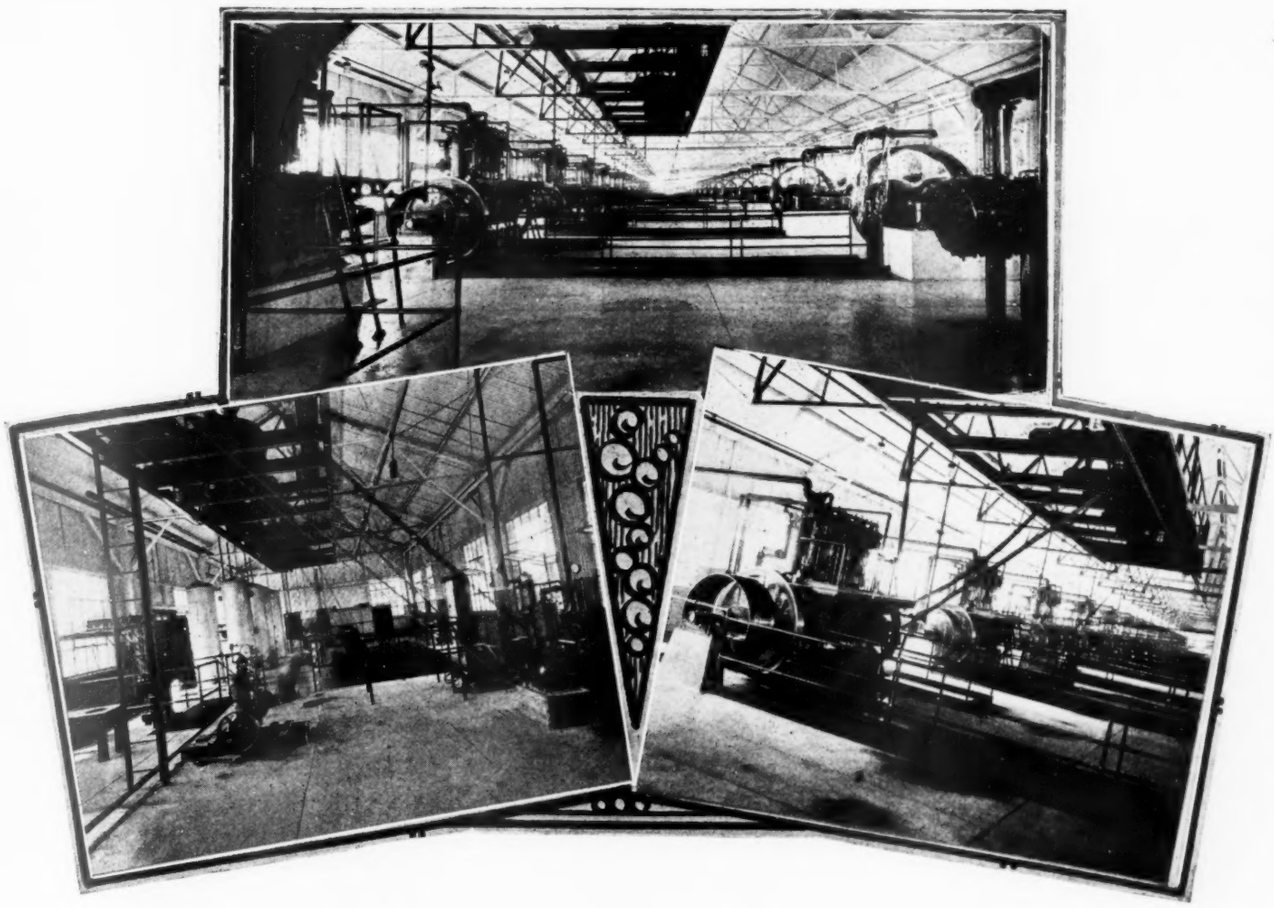
HBB:S

Bulletin G-85 describes the Type V FOOS Heavy Duty Gas Engine as used in Sinclair Plants.

COMPANY, Springfield, Ohio

stion Engines Exclusively. Types for All Gas and Liquid Fuels


General view of No. 6 natural gasoline plant of the Sinclair Oil and Gas Co.
One of the spray ponds
SINCLAIR OILS
Scrubber tanks which handle all gas brought to the plant
Fuel regulators for the 15 – 165 h.p. units
East side of compressor and engine building
Stock tank manifold
Battery of starting air tanks



DODGE EQUIPMENT
FOR SPECIFIC USE IN ALL PLANTS

THE illustrations above are views of the power transmitting equipment built complete by the Dodge Manufacturing Corporation for the Sinclair Oil & Gas Company plant at Covington, Oklahoma.

Dodge engineers are competent, through years of practical experience in the mechanical problems of the oil industry, to make recommendations and to design machinery that will meet unfailingly every kind of service. Whether your mechanical requirements are power transmitting equipment, complete material handling systems, or special built to order machinery, Dodge is the logical source of supply.

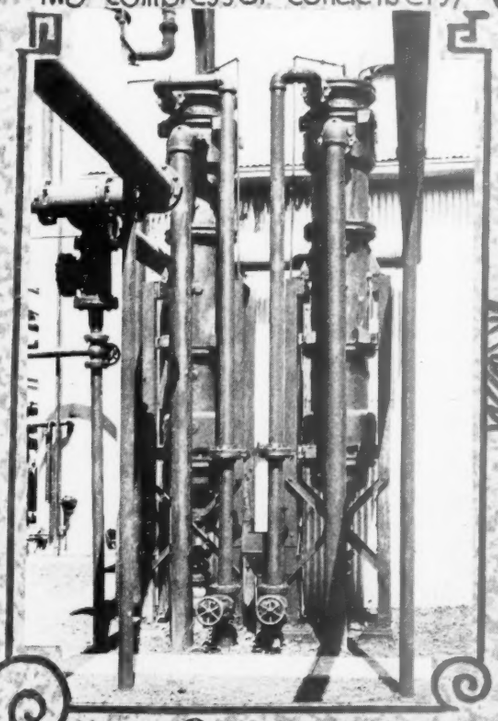
The new Dodge-Timken oil well counter shaft is the latest application of the well known Dodge-Timken roller bearing to the specific needs of the oil industry. It is a further manifestation that Dodge is keeping pace with mechanical requirements of all industries.

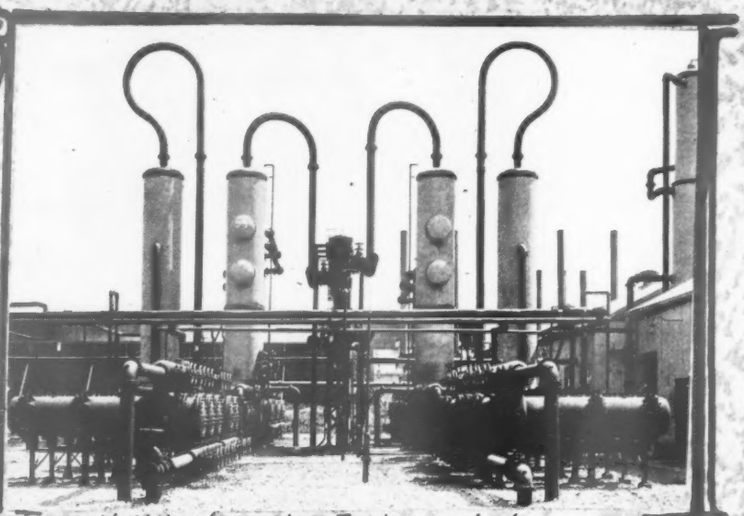
DODGE MANUFACTURING CORPORATION
MISHAWAKA, INDIANA

Branches: New York Boston Newark Philadelphia Oneida Cleveland Cincinnati
Atlanta Houston St. Louis Chicago Minneapolis San Francisco

POWER TRANSMITTING - - MATERIAL HANDLING - - SPECIAL EQUIPMENT

Two compressor condensers,

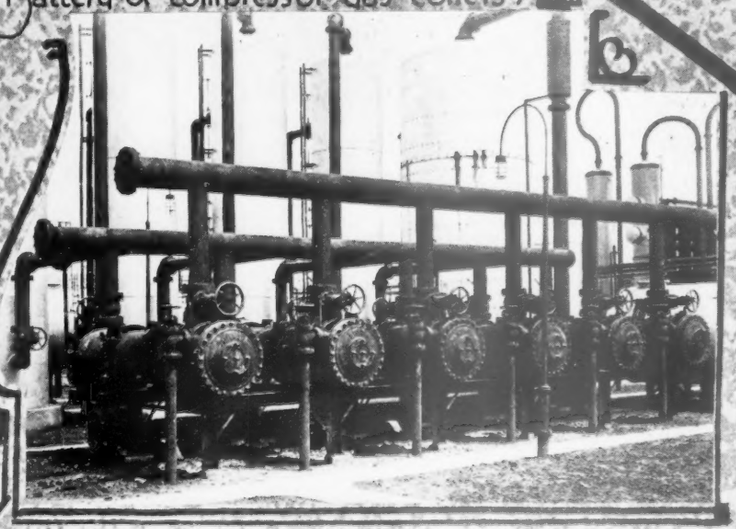




Two distillation units. Each consisting (front to rear) of five heat exchangers, two preheaters, still and rectifying column, two precoolers and four final coolers. Six condensers are showen in center.

Close up view of gas cooler battery

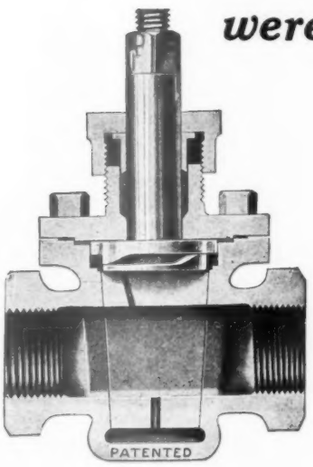
Battery of compressor gas coolers.



Part of the safety first programme

HOMESTEAD Straightway Quarter-Turn VALVES

were used on the Sinclair Gasoline Plant



The principle underlying the Homestead Quarter-Turn Valve is to provide a straight and nearly frictionless passage of the same area as the line on which the valve is installed, and at the same time to make it possible to open or close the valve almost instantaneously.

During the last three years we have made changes in the design of our quarter turn valves in accordance with our policy of continually improving the quality of the product. The cam has been redesigned and is machine finished to give a smoother working plug and one which WILL NOT RISE FROM ITS "SEAT."

For over thirty years HOMESTEAD VALVES have been delivering superior performance.

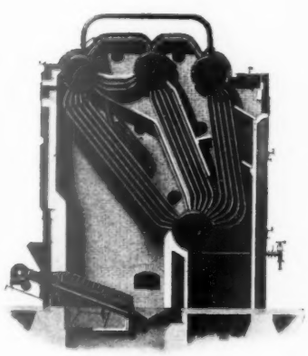
Homestead Valve Manufacturing Company, Homestead, Pa.

HOMESTEAD

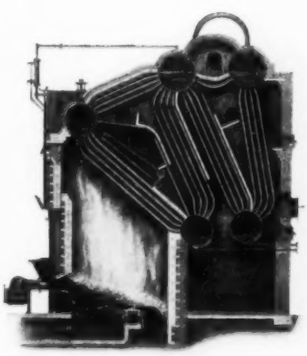
PRODUCTS: Quarter Turn Valves — Straight-Way Three-Way Four-Way Types — Full Round-Way Valves — Cast Steel Refinery Valves — Lubricated Valves — Hovalco Blow-Off Valves — Protected Seat Globe Valves B & O Pat. — Protected-Seat Hydraulic Operating Valves

Casey-Hedges Boilers

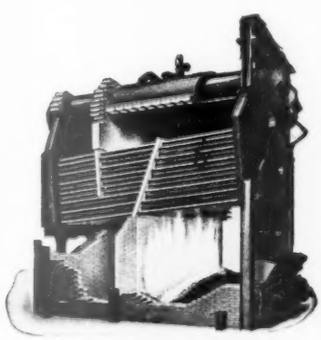
All types, all sizes and all pressures are sold all over the world for all purposes. Their dependability is recognized by all their users.



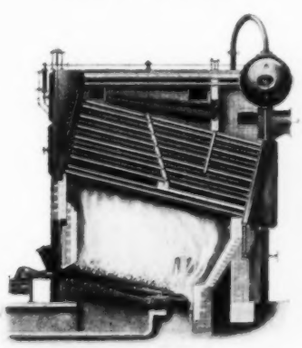
S-V Type Boiler



Multipass Boiler



Horizontal Drum Boiler



Cross Drum Boiler

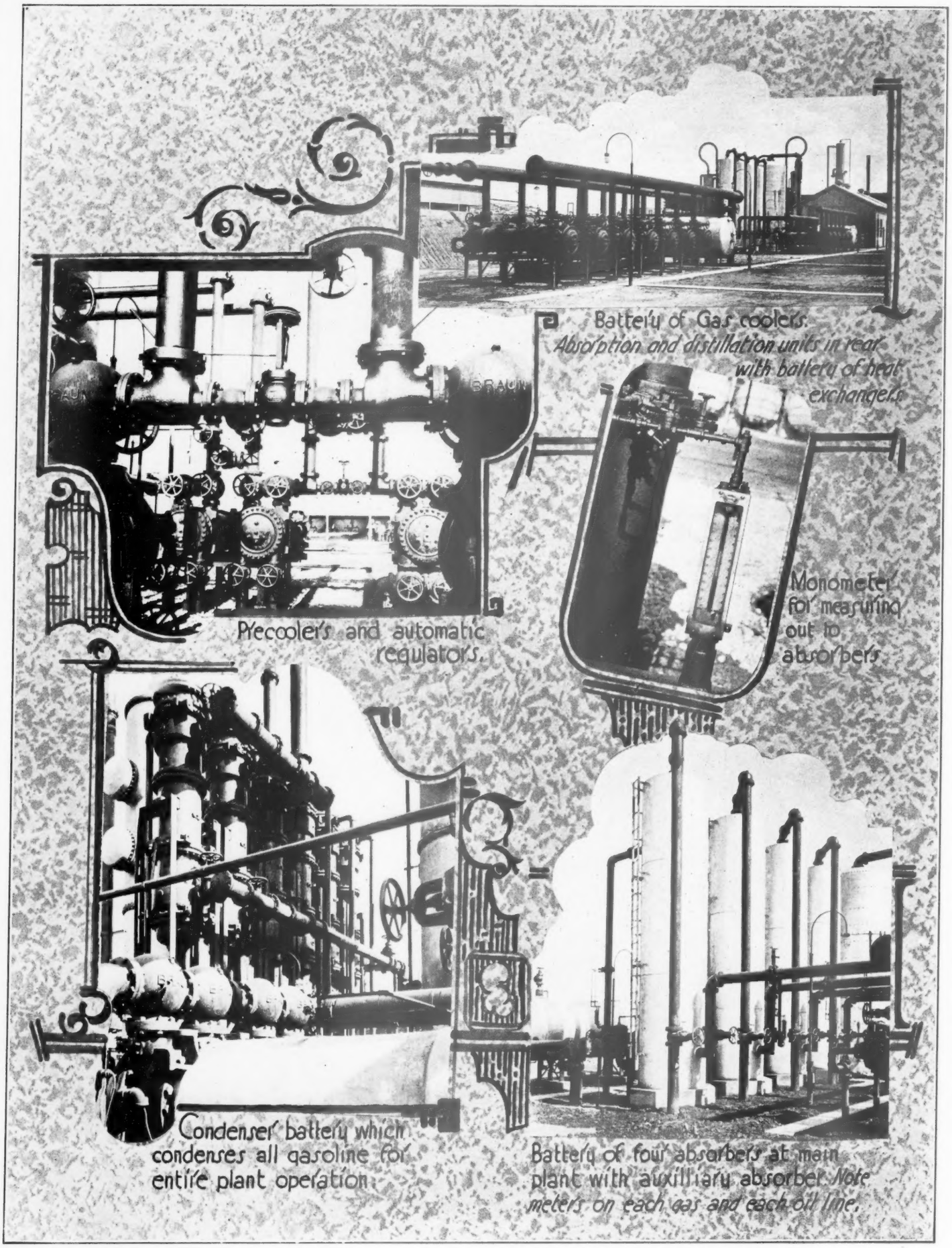
Designed and built by

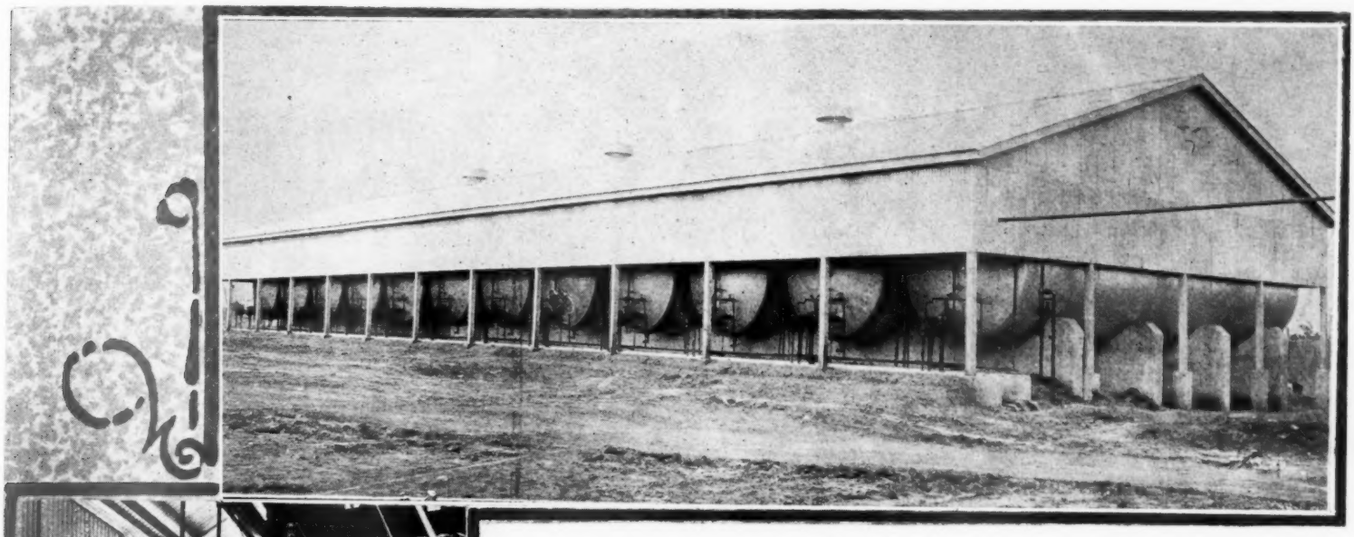
The Casey-Hedges Co.

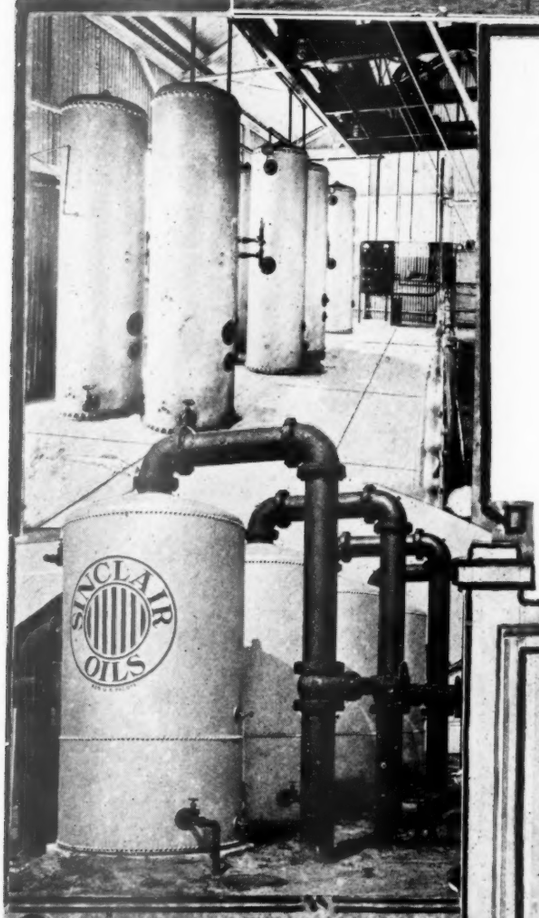
Chattanooga, Tenn.

Branches in all principal cities.

Write for catalogues


Battery of Gas coolers.
Absorption and distillation units in rear with battery of heat exchangers.
Precoolers and automatic regulators.
Monometer for measuring out to absorbers
Condenser battery which condenses all gasoline for entire plant operation.
Battery of four absorbers at main plant with auxiliary absorber. Note meters on each gas and each oil line.





The majority of the Steel Tankage in the Covington-Garber plant was furnished by us.

Why Sinclair and Other Large Companies Specify Our Equipment

Because—

Experienced graduate engineers, boiler makers, welders and mechanics combined with the best of materials, machinery and equipment enable us to manufacture tankage built to give service for the purpose intended with a big factor of safety.

Because—

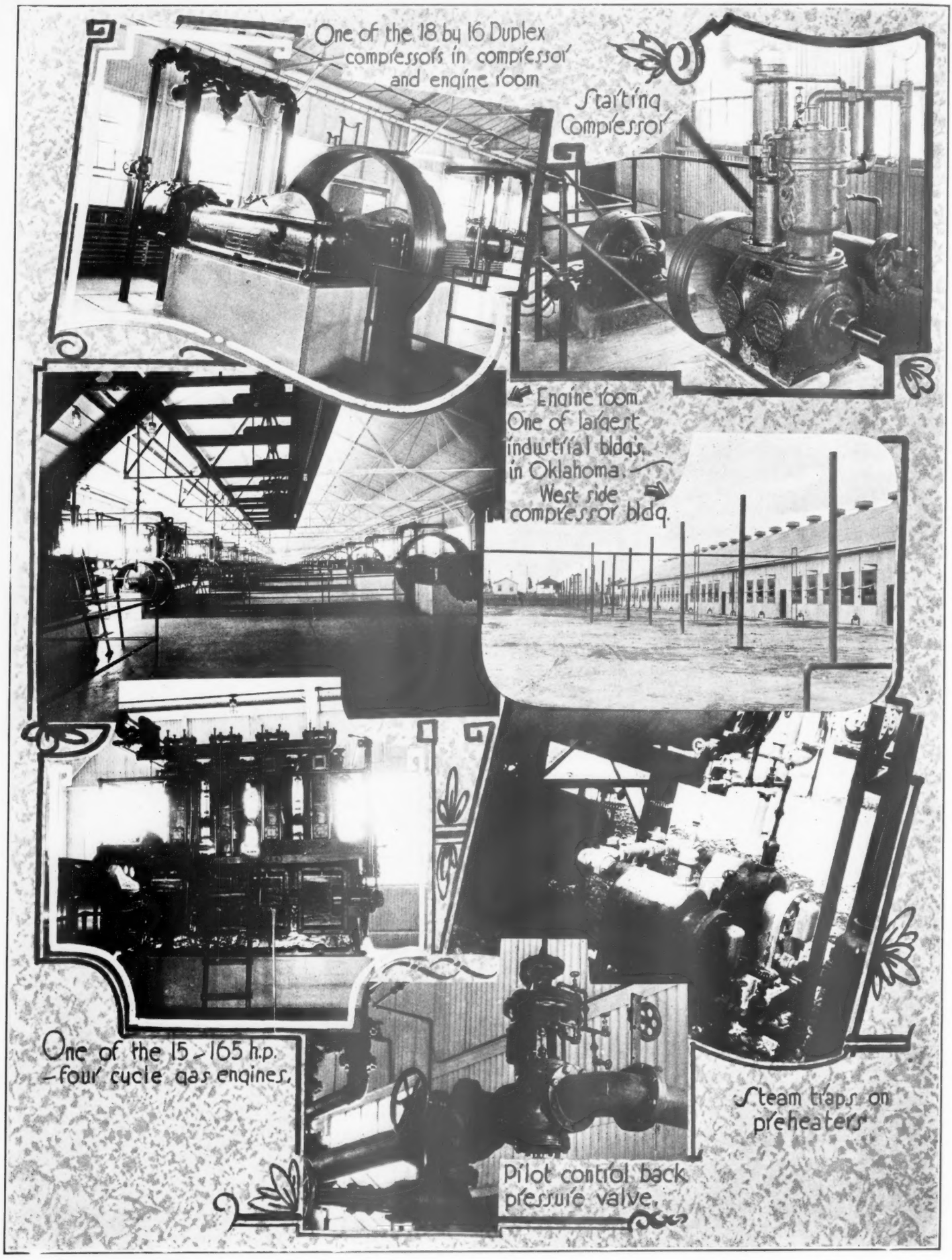
A fifteen hundred ton stock of material in our plant located in the heart of the Mid-Continent combined with day and night operations enable us to give the quickest delivery possible.

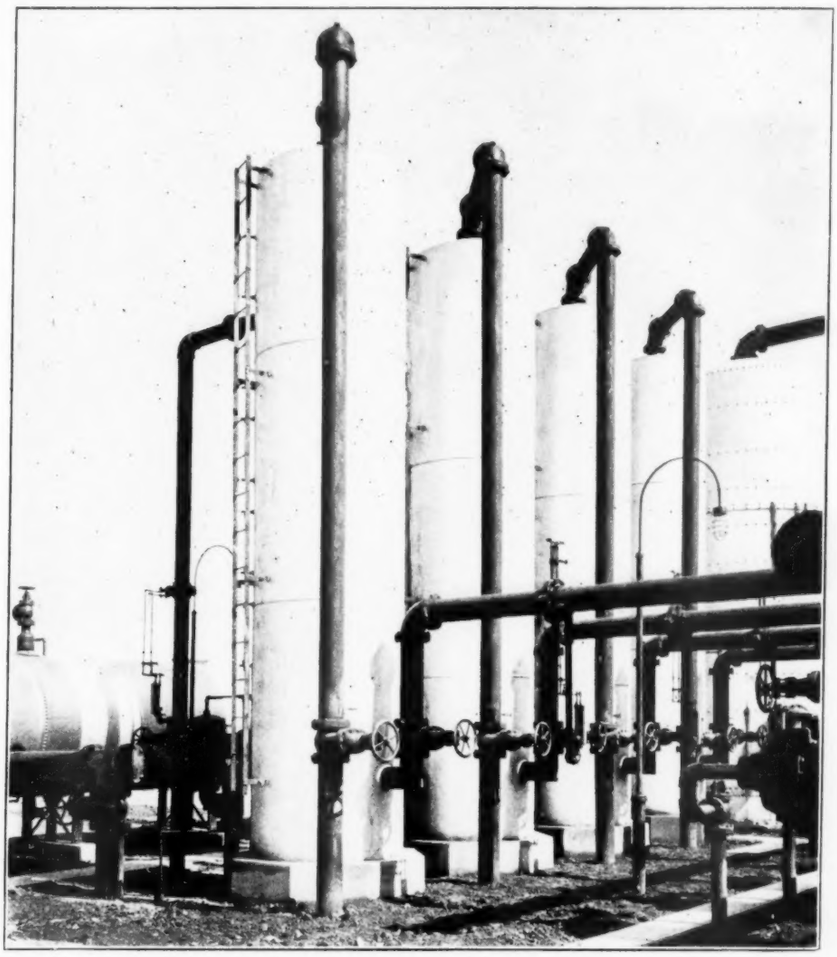
TULSA TYPE TIGHT TANK

MANUFACTURED BY

TULSA BOILER & MACHINERY CO.

TULSA, OKLAHOMA


One of the 18 by 16 Duplex compressors in compressor and engine room
Starting Compressor
Engine room. One of largest industrial bldgs. in Oklahoma.
West side compressor bldg.
One of the 15 - 165 h.p. - four cycle gas engines.
Steam traps on preheaters
Pilot control back pressure valve.



4 Newton Absorbers

In the New SINCLAIR GASOLINE PLANT in the GARBER-COVINGTON POOL

Newton Absorbers enjoy the distinction of being the most efficient and economical absorbers made.

A widespread recognition of their merit is making them the *preferred* absorbers over all others. The New Sinclair Gasoline plant in the Garber-Covington Pool contains the four Newton Absorbers pictured above; three additional Newton Absorbers are being shipped to this same company.

As an example of their unprecedented popularity, we cite the fact that, although on the market only a short time, Newton Plants are now operating satisfactorily in Pennsylvania, Arkansas, Louisiana, California, Oklahoma, Texas, West Virginia, Kansas, and Montana. Write for the reason!

Representatives

Hurley Brothers
Kennedy Bldg.,
Tulsa, Okla.

The National Supply Co.
General Offices: Toledo, Ohio
and all stores

Foreign Representative

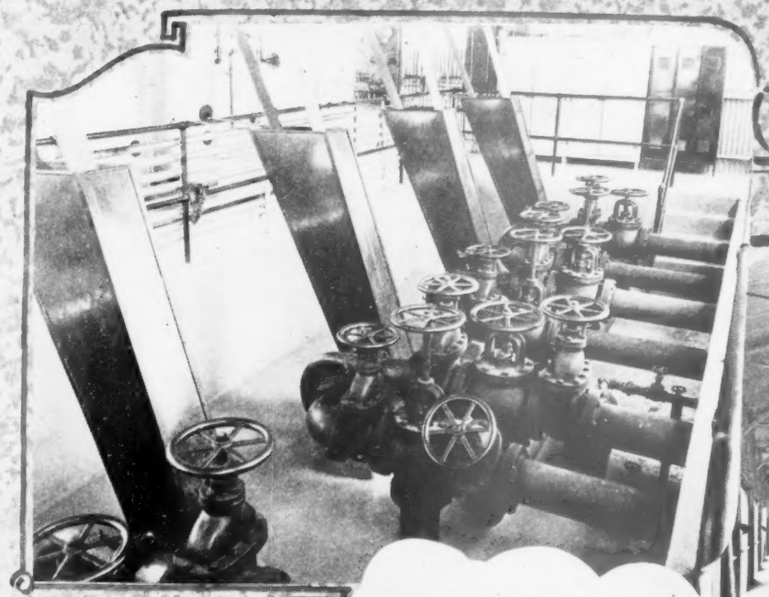
The National Supply Corp.
120 Broadway, New York
and 165 Queen Victoria St.,
London

"Better—Always Better!"

NEWTON PROCESS

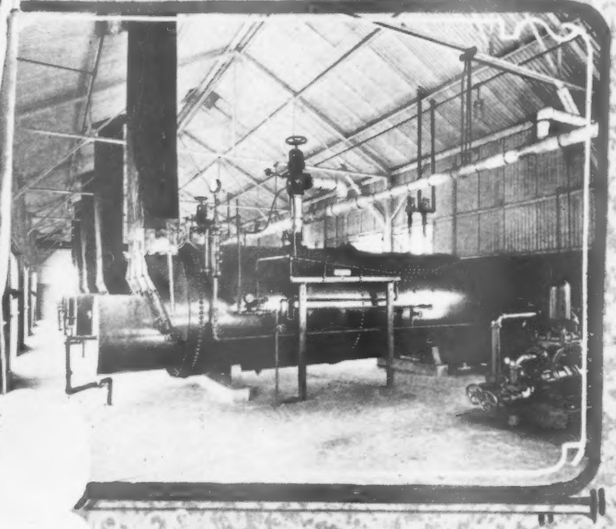
MANUFACTURING COMPANY

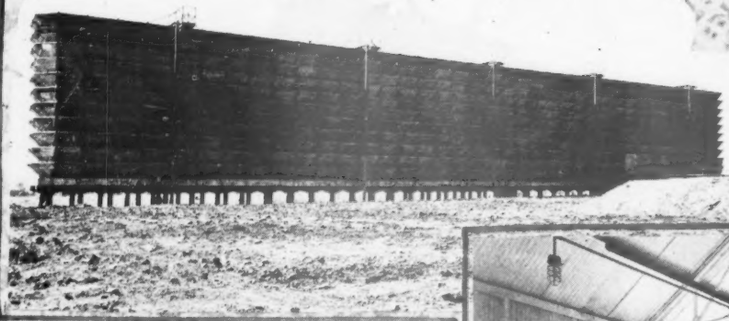
FULLERTON, CALIFORNIA



Belt driven circulating pumps.

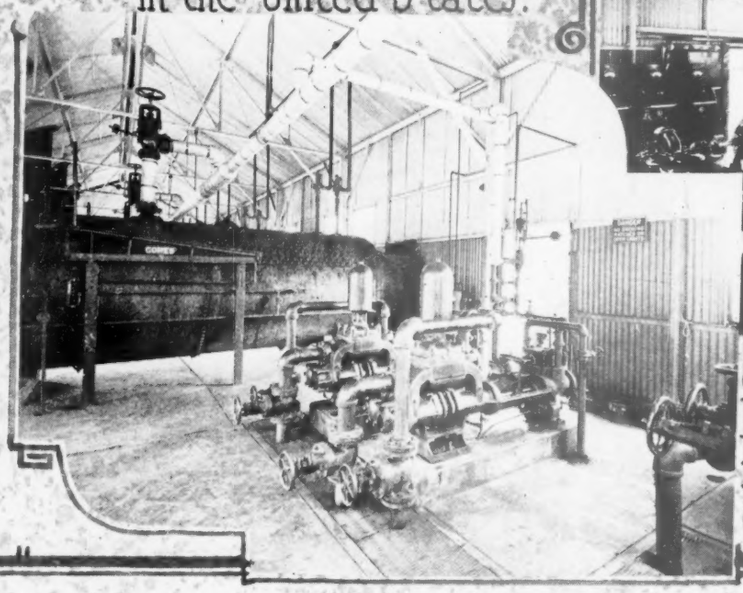
General view of boiler house.





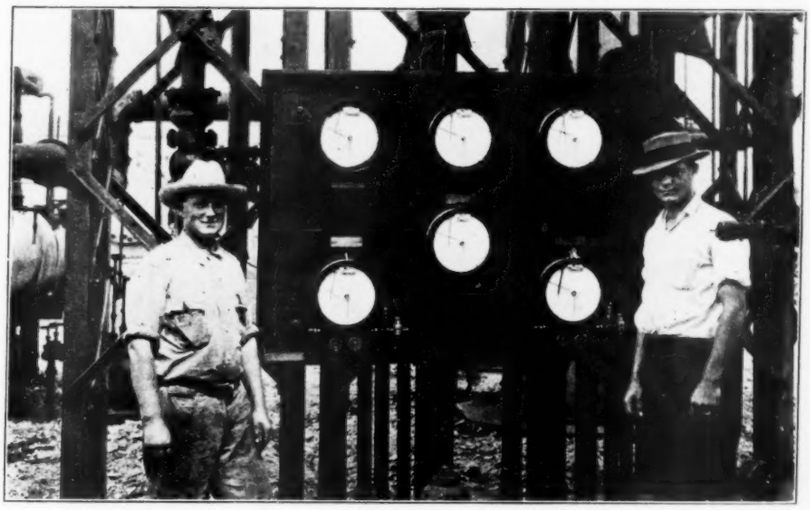
Cooling tower, one of the largest in the United States.

View of pump house. Three water pumps in front and three oil pumps in rear

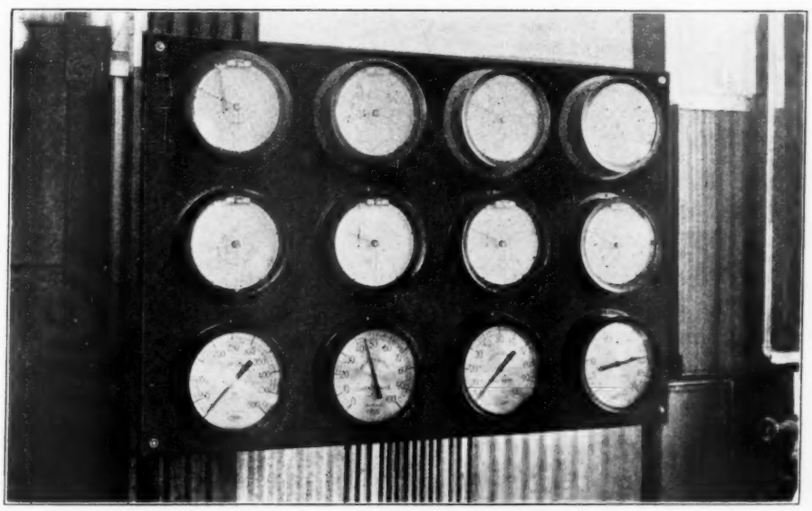


Boiler feed pumps. Valves on right connect to automatic feed water tanks.

Some of the Many Foxboro Indicating, Recording and Controlling Instruments Installed at Sinclair Oil and Gas Co.'s Covington, Okla., Plant



Left to right: V. H. Jones, Chief Engineer, and M. Milton, Meter Reader, standing before one of the Foxboro gauge boards containing Foxboro Recording Thermometers and Temperature Recorder-Controllers.



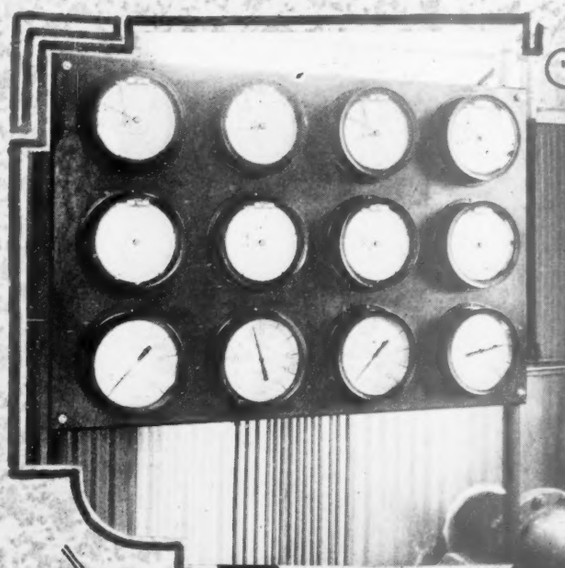
Another gauge board at the Covington plant containing Foxboro Indicating and Recording Instruments. Foxboro Orifice Meters, Temperature Controllers, Recording Thermometers, and Recording and Indicating Gauges are used in this plant, the largest natural gasoline plant in the world.

THE FOXBORO CO., INC.
Neponset Avenue, Foxboro, Mass., U. S. A.
205 So. Cheyenne Avenue, Tulsa, Okla.

New York Chicago Boston Philadelphia
Pittsburgh Cleveland Rochester Atlanta Los Angeles San Francisco Portland, Ore.

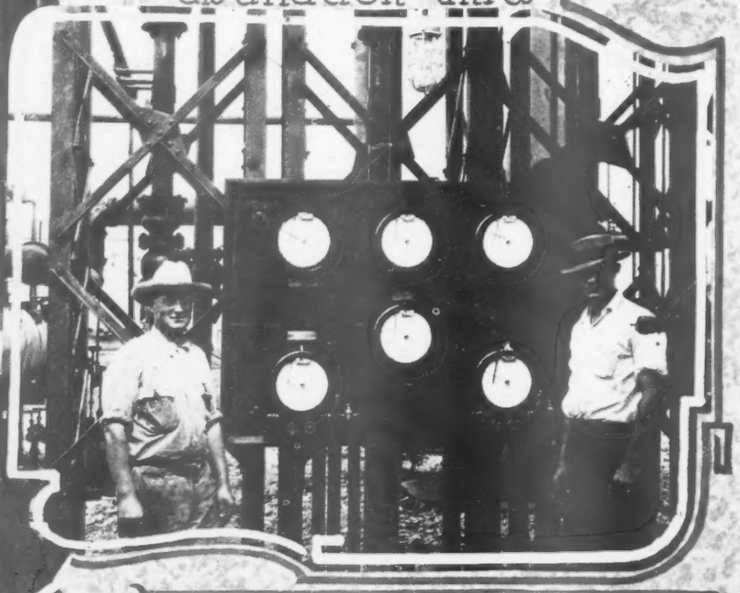
FOXBORO
Reg. U. S. Pat. Off.
THE COMPASS OF INDUSTRY

Instruments for indicating, recording and controlling temperature, pressure, humidity and flow.

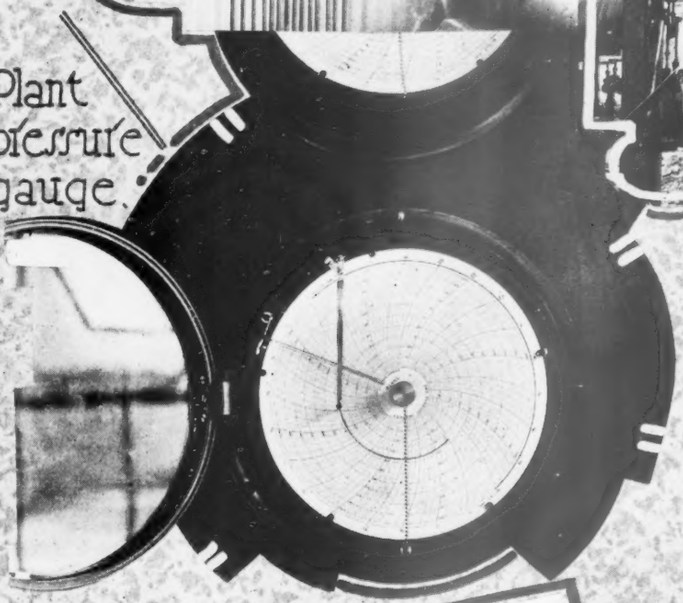


Gauge board in control house

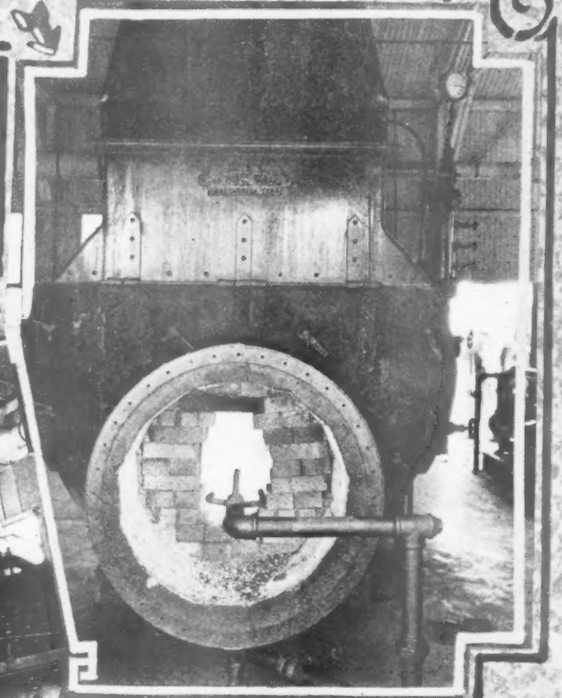
Control panel for the distillation units

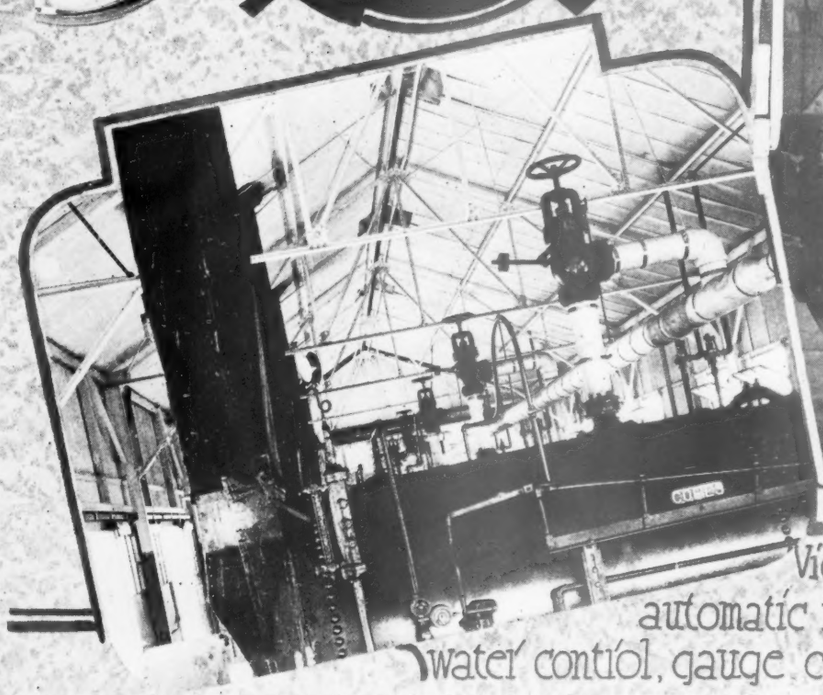


Plant pressure gauge.

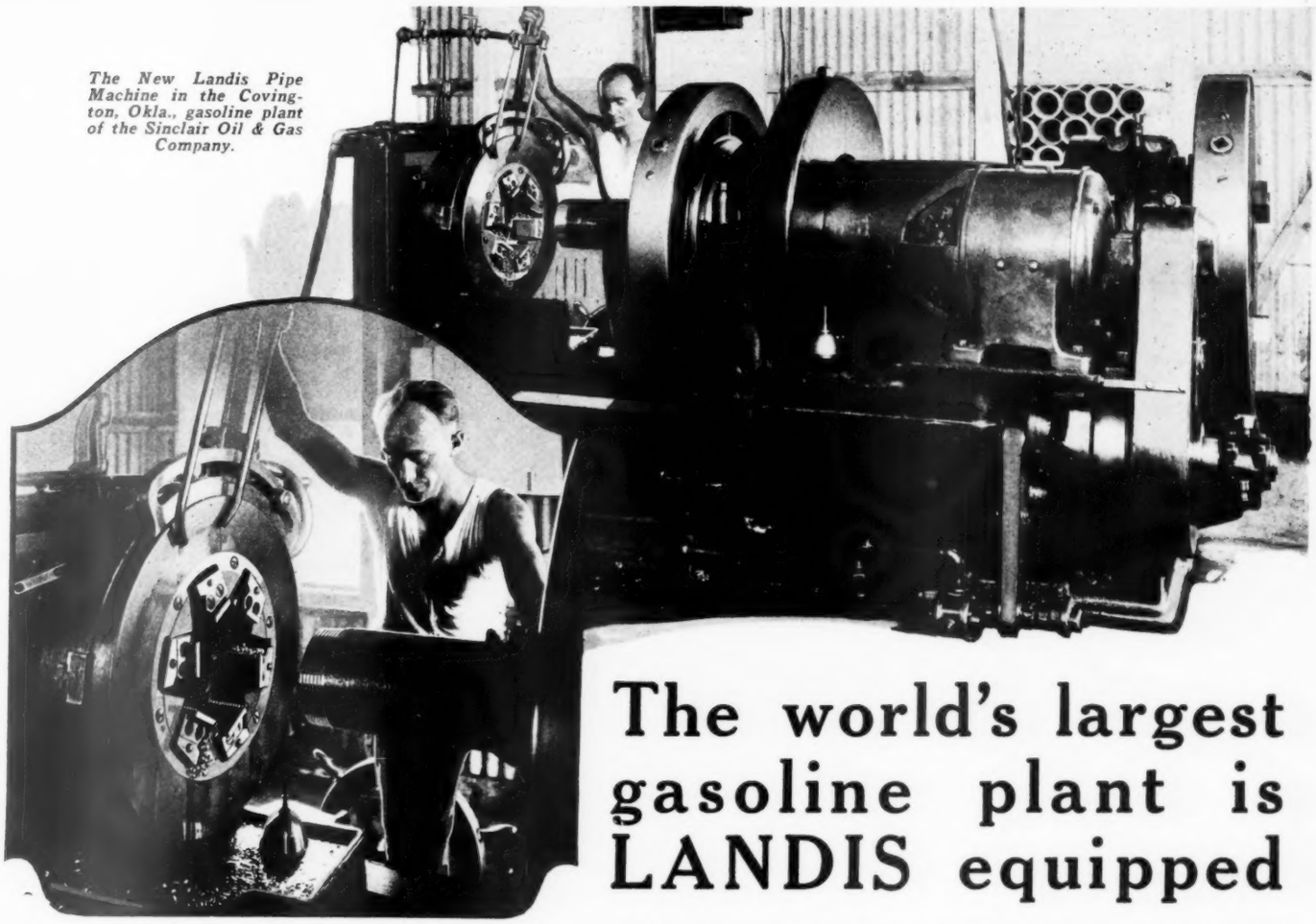


Front of Scotch Marine boiler showing dutch oven and plastic fire brick furnice lining.





View of boiler room showing automatic non-return valves, feed water control, gauge columns and stack dampers.



The New Landis Pipe Machine in the Covington, Okla., gasoline plant of the Sinclair Oil & Gas Company.

The world's largest gasoline plant is LANDIS equipped

As in every other phase of the oil industry the gasoline plant, too, is a heavy user of LANDIS Pipe Machines, and for the same reasons—operating economy, low upkeep and supreme fitness for the job.

The famous Covington, Okla., gasoline plant of the Sinclair Oil & Gas Company was built with pipe threaded and cut on the LANDIS. So was the Cromwell, Oklahoma, plant of the same company, and also their Madison, Kansas, plant.

The chasers of the LANDIS Die Head, long-lived and ground on the ends, not in the throat, represent that simplicity and economy which are highly valued in the oil industry. These qualities, characteristics of every feature of the whole machine, explain its popularity wherever pipe is handled.

LANDIS TRADE MARK

You will be interested in LANDIS details—they mean dollars to you. The new catalog is replete with information which has saved time, money and men on numberless pipe jobs. Write us for a copy.

LANDIS MACHINE COMPANY

Waynesboro, Penna.

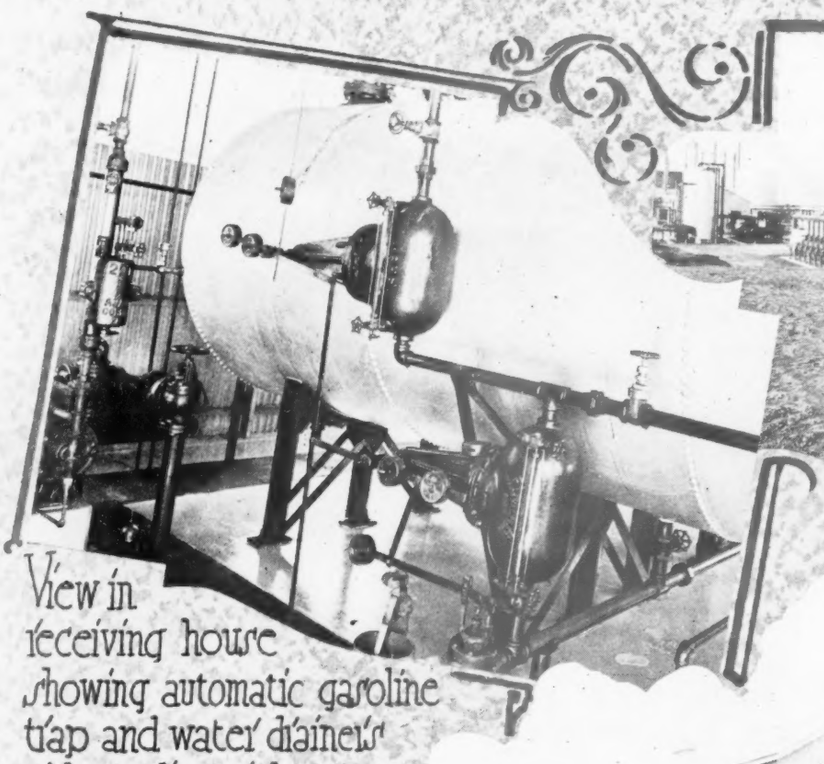
Detroit Office: 5928 Second Blvd.

DOMESTIC AGENTS: Marshall & Huschart Machinery Co., Chicago, Ill.; Marshall & Huschart Machinery Co. of Indiana, Indianapolis, Ind.; Colcord-Wright Machinery & Supp'y Co., St. Louis, Mo.; R. B. Whitacre & Co., St. Paul, Minn.; Hamilton Machinery Co., Chattanooga, Tenn.; Young & Vann Supply Co., Birmingham, Ala.; Woodward, Wight & Co., New Orleans, La.; Jos. T. Ryerson & Son, Houston, Texas; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.; Salt Lake Hardware Co., Salt Lake City, Utah; Harry M. Euler Co., Portland, Ore.; Hallidie Machy. Co., Seattle, Wash.; Hallidie Co., Spokane, Wash.; Herberts Machinery & Supply Co., San Francisco and Los Angeles, Calif.; R. S. Armstrong & Bro. Co., Atlanta, Ga.

CANADIAN AGENTS: Canadian Fairbanks-Morse Co., Toronto and Montreal.

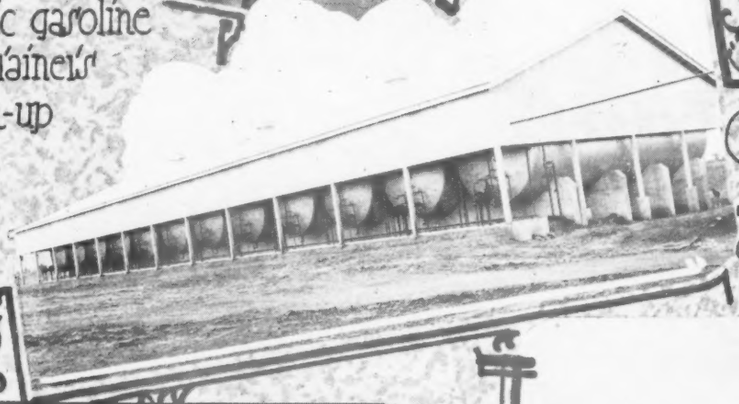
FOREIGN REPRESENTATIVES: Benson Brothers, Ltd., Sydney; Schuchardt & Schutte, Berlin, Vienna, Prague, Warsaw; R. S. Stokvis & Zonen, Rotterdam, Brussels, Soerabaya; M. Almeida & Cia, Sao Paulo, Rio de Janeiro; Alfred Herberts, Ltd., Coventry, Calcutta, Osaka; Burton Fils, Paris; D. Drury & Company, Johannesburg.

XUM

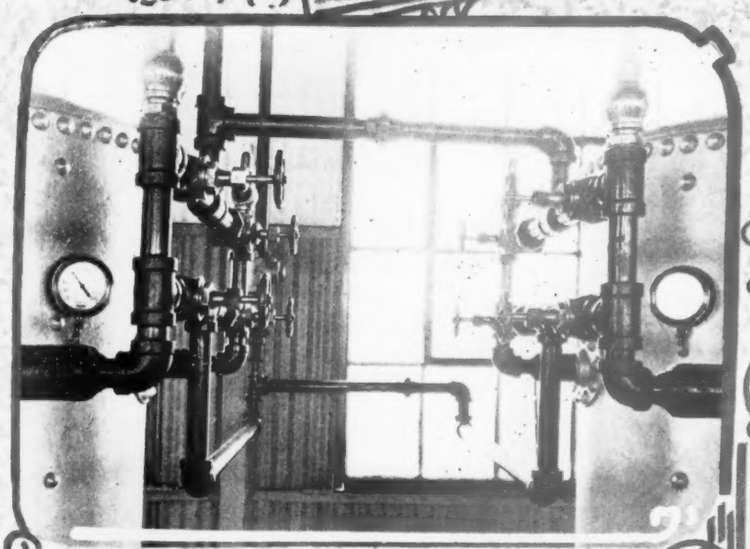


View in receiving house showing automatic gasoline trap and water drainers with gasoline pick-up pump to left.

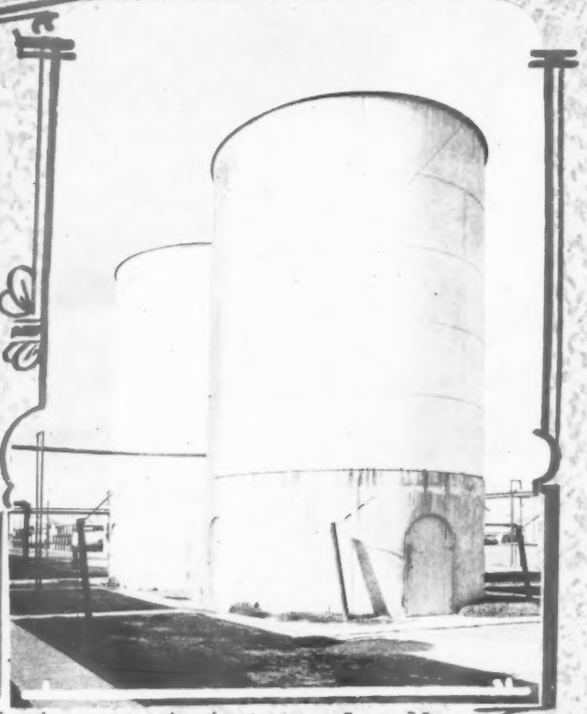
Chemical engine. Looking south across plant yard.



One of the gasoline storage batteries consisting of twelve 10 by 40 feet.



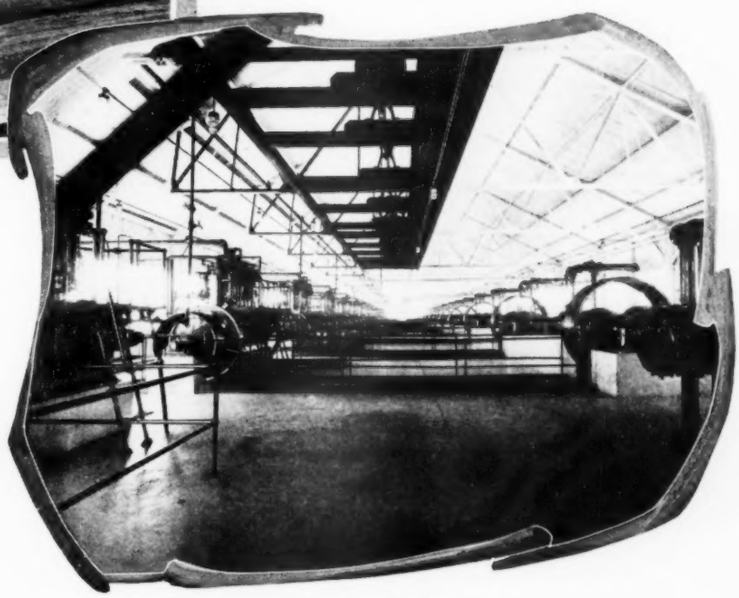
Air storage tank and manifold.



Circulating water gravity tanks. *Note storage bins beneath tanks.*

Exterior view of Sinclair plant, showing "Indco" Buildings.

The Industrial Construction Co. built the first Sinclair building in 1918 and has built all subsequent additions, as well as other Sinclair Plants.



Interior view of Sinclair Compressor Building.

INDCO BUILDINGS

THE steadily increasing number of plants throughout the Oil Country "Indco" built must mean that there's a sound reason for their growing popularity.

Operators have learned that "Indco" buildings are honestly built . . . that they are planned with a full knowledge of their uses . . . that they are economical buildings, everything considered.

It is true that "Indco" Buildings may not be cheapest in first cost . . . but they must be cheapest in the long run since Sinclair, Carter, Mid-Continent and other large gasoline producers continue to specify "Indco" Buildings as new buildings are needed.

Let us figure on your next building.

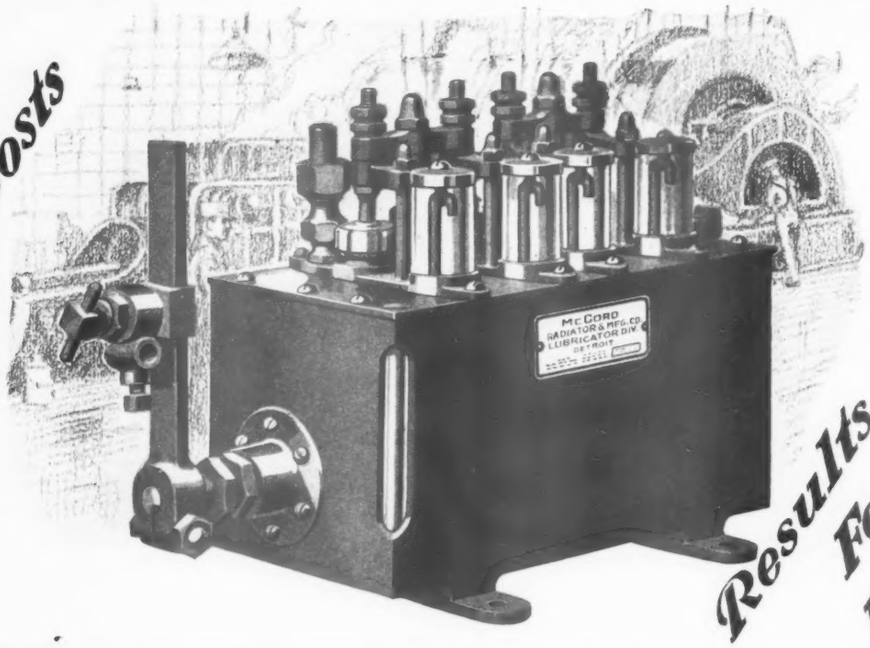
INDCO

INDUSTRIAL CONSTRUCTION CO.

PHONE 2-6260 CENTRAL NATIONAL BANK BLDG.

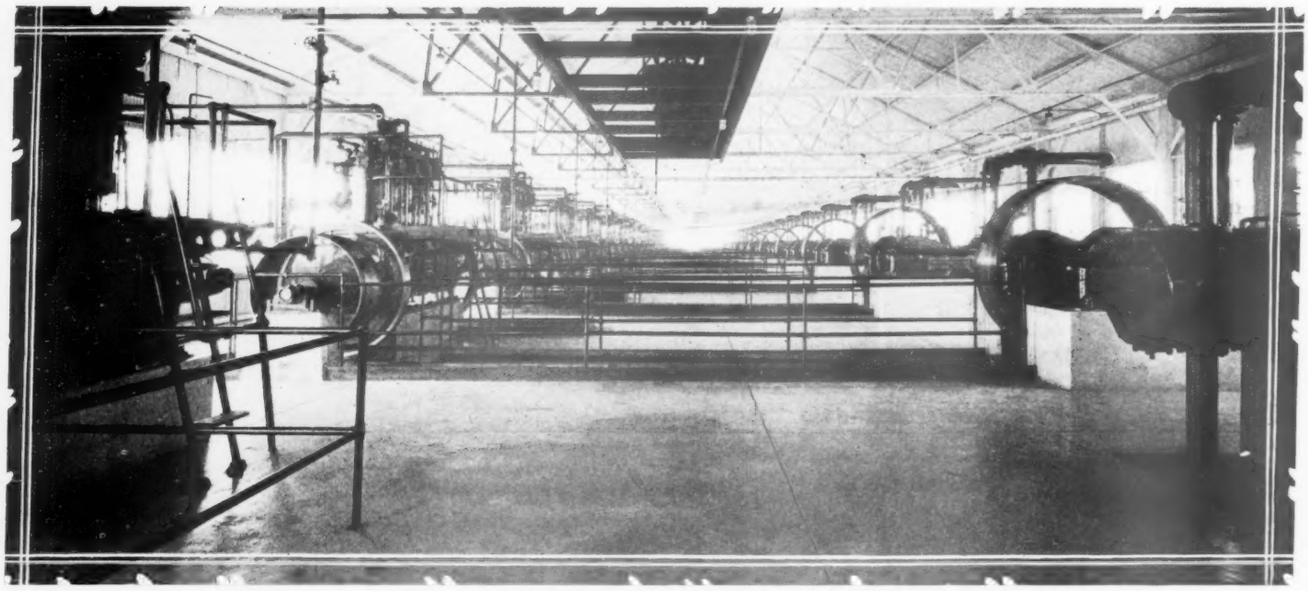
TULSA, OKLAHOMA

A Faster Pace and Lowered Production Costs



Results of McCord Force Feed Lubrication

McCord FORCE FEED Lubricators Standard of the Oil Fields



SINCLAIR REFINING COMPANY PLANT

Covington-Garber Field, Garfield County, Oklahoma

McCord Lubricator Equipped
OF COURSE

McCORD RADIATOR AND MANUFACTURING CO., LUBRICATOR DIVISION, DETROIT, MICH.

Distributed in the Oil Fields by National Supply and Branches

Natural Gas Developments

Gas Hazard Warning Issued to the Public By Bureau of Mines

Almost every individual in his daily life is subject to possible danger from asphyxiation, by fire or explosion due to one or more of the combustible gases used for the production of light, heat and power, the prime essentials of our modern industrial civilization, declares the Bureau of Mines. Any combustible gas or vapor, when mixed with air or oxygen within certain limiting proportions, will explode on ignition. The violence of the explosion varies with respective proportions of air and gas, and with the degree of confinement of the mixture.

Carbon monoxide is produced in the burning of carbon containing materials such as natural gas, coal, coke, wood, gasoline, explosives, etc., whenever the supply of air or oxygen is not sufficient for complete combustion, states A. C. Fieldner, supervising chemist of the bureau's Pittsburgh experiment station, in a review of the subject. It is a major constituent of water gas, producer gas, blast-furnace gas, and coal gas. Automobile exhaust gas contains 3 to 12 per cent of carbon monoxide. Pure carbon monoxide is colorless, tasteless and odorless. It has practically the same weight as air. Like the copperhead, it strikes its victim without warning. Very low percentages, such as 0.1 to 0.15, if inhaled for one hour or more often give a characteristic warning headache, but higher percentages usually render the victim unconscious without warning.

Carbon Monoxide

Pure natural gas contains no carbon monoxide, therefore small gas leaks do not cause poisoning from carbon monoxide as is the case with manufactured gas. The principal hazard in the domestic use of natural gas is from carbon monoxide created by incomplete combustion in poorly designed and unvented gas-room heaters. Even well-designed heaters are dangerous when improperly used. A gas heater with lava tips and free burning yellow flames does not give off any carbon monoxide when the flames burn freely in the air without touching any metal surface, but if the burner tube is turned from its proper position so that the flames impinge on a metal surface, enough carbon monoxide will be formed to cause asphyxiation in a tightly closed room in 30 minutes to one hour—that is, if the heater has no flue connection. If gas heaters must be operated without flue connection, windows should always be left open to ventilate the room. All gas heaters and stove connections should be solidly piped. Rubber-tube connections are always a fertile source of danger. The public generally does not appreciate the danger from gas leaks. Many disastrous explosions in basements of buildings that are attributed to black-hand bombs or other mysteriously placed explosives are found on investigation to be caused by gas accumulations from leaks or burners that have become extinguished by drafts.

Coal gas is more easily ignited and tends to form explosive mixtures more easily than natural gas because of its high hydrogen and carbon monoxide content, both of which have a much broader range of possible explosive mixtures when mixed with air, and have higher rates of flame propagation.

Blue-water gas, coke-producer gas and blast-furnace gas are poisonous because of the very high carbon monoxide content. Workmen around blast furnaces, gas producers and other gas-manufacturing equipment should never enter tanks, tunnels or other enclosed or semi-enclosed spaces which may contain gas without respiratory protection, such as hose masks leading to the outside air, or self-contained oxygen breathing apparatus unless the absence of gas has been definitely shown by suitable tests.

Automobile Exhaust

Carbon monoxide is also the poisonous constituent of automobile exhaust gas, the average content being 6 to 7 per cent. It is suicidal to run an automobile engine in a closed private garage for ten minutes. By actual experiment at the Bureau of Mines, dogs became unconscious after a motor was run ten minutes in a single-car garage, with the doors and windows closed. Garages in which repair work is to be done should have good ventilating systems. It is a good plan to connect a hose or pipe from the muffler vent to the outside of the garage.

Gasoline fires and explosions are among the most common of present-day hazards. Only 15 per cent of gasoline vapor in air is sufficient to make an inflammable mixture. Air flowing over liquid gasoline and many crude oils readily becomes charged with enough hydrocarbon vapor to transmit flame on reaching some source of ignition such as a flame, an electrical spark or short circuit. A current of this vapor-laden air has been known to transmit flame several hundred feet from the source of ignition. The ship-repair companies have found it necessary to observe most rigid precautions in removing all traces of oil from ship bunkers before making repairs

(Continued on Page 109)

GAS LINE TO PAULDING AND NEW WELLS PLANNED

TOLEDO, Ohio, Sept. 4—The artificial gas plant at Paulding, Ohio, was partially destroyed by fire, but not put out of commission. Temporary repairs have been made to supply consumers with gas until the natural gas line from the main line that runs from Payne to Antwerp can be laid into Paulding. Ten cars of pipe are being shipped from St. Louis for this line which will be completed during September. Loss to the plant is estimated at $15,000, which is owned by the Ledford-Schenck Oil & Gas Co., parent company of the Payne Natural Gas Co.

Several new gas wells will be drilled in the Payne gas field which lies to the southwest a short distance from Payne, Benton Township, Paulding County. Oil production in the Payne Field is holding up with other sections of the Trenton Rock areas of northwestern Ohio, the wells now two years old showing from 2 to 10 bbls. each. Natural gas production is around 3,000,000 feet and can be easily doubled with a few more completed wells.

NATURAL GAS LUNCHEON

SHREVEPORT, La., Sept. 4.—Natural Gas was the topic for discussion following the regular monthly luncheon of the women's committee of the Southwestern Gas and Electric Co. F. A. Armbruster, superintendent of the gas department of the Southwest company, spoke on the distribution system and the precautions taken to protect the consumer against any interruption in service. H. C. Otis, superintendent of the Caddo division, discussed the origin of natural gas and various problems of production.

Miss Myrtle McInnis and Miss Cecile Hopkins gave a demonstration of the prone pressure method of artificial respiration and Mrs. George Raymond, who presided, outlined the safety promotion program which the women's committee will carry out during the next few months. Jay Alan Reid, of San Antonio, Tex., safety director of the Central and Southwest Utilities Co., made a brief talk.

VENTURA FIELD GAS OUTPUT MAY INCREASE

In a review of natural gas developments in the Ventura Field, the California State Mining Bureau bulletin says:

For a long time the production of gas from the fields in Ventura County was small. However, in 1924, exploitation of deeper sands in the Ventura Field was started by Shell Co. of California, Associated Oil Co. and General Petroleum Corp. The production of gas from this field is increasing, a total of 2,190,443,000 feet having been produced during the month of March, 1926. Recent surveys of this field indicate that the peak production may reach a total of 150,000,000 feet a day either late in 1926 or early in 1927. The extent of this field is as yet not definitely known, but the possibilities of other gas accumulations on the Ventura anticline within a distance of 3 miles easterly and 8 miles westerly are very good.

The average daily production for 1924 was 4,440 bbls. of oil based on the production for the first six months, and 8,125,000 feet of gas. Since then production has been increased very materially through the discovery of a deeper horizon in several wells.

On the assumption that this ratio will hold during the decline of these wells, it would be possible to figure the decline of the gas. It seems, however, that new production from the same horizon should much more than offset the decline during the next year, and it would not be surprising to see a peak production of gas from this field of 150,000,000 feet per day.

In regard to the possibility of conserving a portion of this gas a complication enters that should be less important as more wells are drilled into the horizon. This complication is the dangerously high pressure which the wells develop when small flow nipples are used.

The original production from Associated Oil Co.'s No. 9-A Lloyd was 4,300 bbls. of oil and 3,000,000 feet of gas a day with a $\frac{1}{2}$-inch nipple, but the pressure built up to a dangerous point and a 1⅛-inch nipple was substituted. The pressure then mounted to 900 pounds per square inch. Two nipples, a 1¼-inch and a ⅝-inch, yielded about 15,000,000 feet per day under 450-pound pressure. The final installation is two $\frac{13}{16}$-inch nipples which give production of about 15,000,000 feet per day, under 470-pound pressure, and 4,500 bbls. of oil per day.

Well No. 6 Lloyd produced 4,200 bbls. of oil and 4,158,000 feet of gas daily through one $\frac{13}{16}$-inch nipple, and after some experimental changes it was again equipped in the same manner on February 13. The flow at that time was 3,900 bbls. of oil and presumably the same amount of gas under 450-pound pressure.

This new zone below 4,200 feet undoubtedly extends throughout the entire proved area, and probably much farther. Undoubtedly, some of the older wells are in condition to be deepened in this zone, thereby making possible a speedier development than if it were necessary to drill entirely new wells. The proved area consists of about 160 acres. No permanent decline of gas production of the Ventura Field should be expected until wells over the entire area have been drilled into this zone. It may therefore be expected that the actual production will increase very materially during this year.

The following quotation from the report of W. M. Craddock for Shell Co. of California contains an interesting statement relative to a proved gas horizon in the Ventura Field:

"The discovery of gas seepages coming up through the water of an irrigation ditch, which crossed the structure just east of the Ventura River, led to the drilling of shallow wells and the discovery of the 'Top Gas Zone' in 1903.

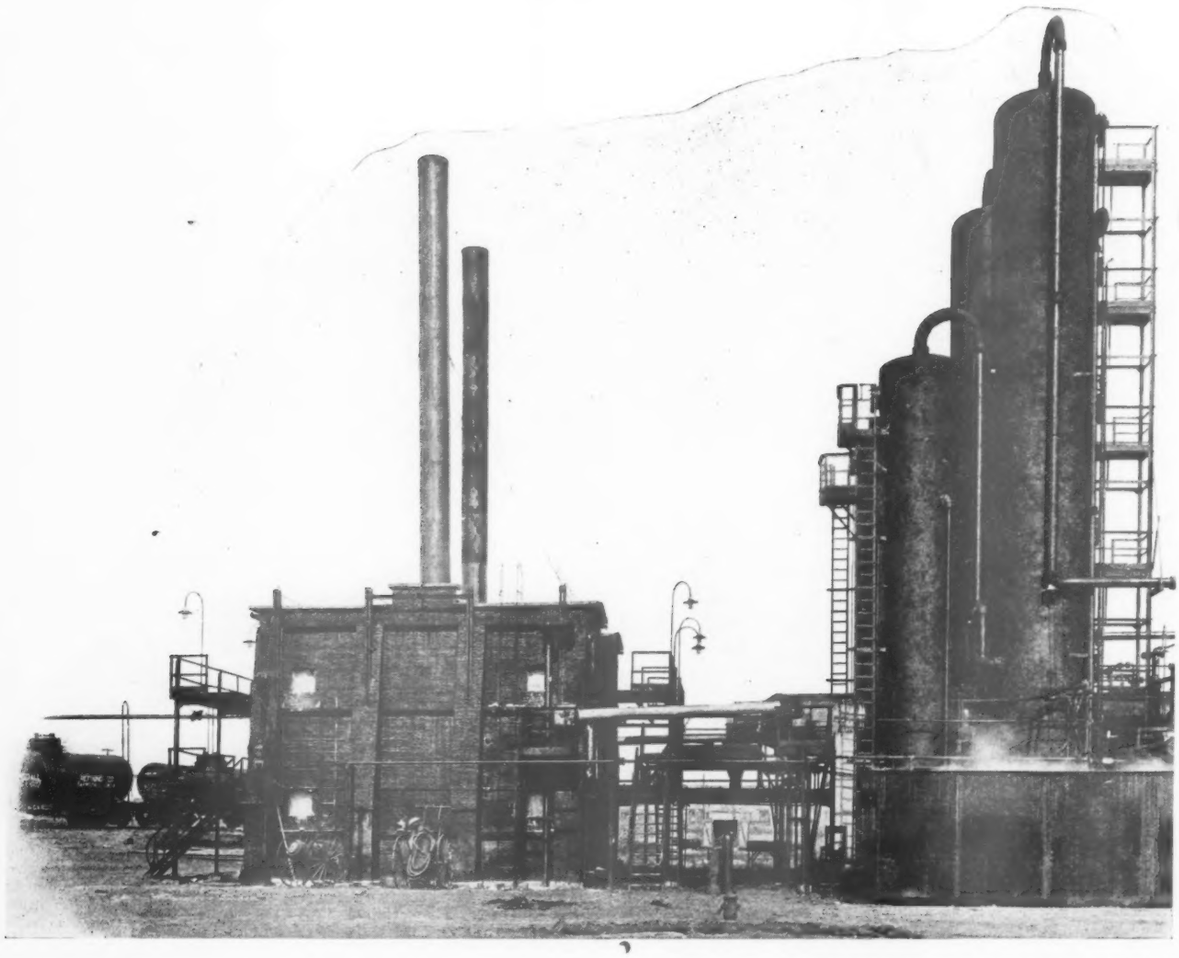
"Then shallow wells, the deepest being 800 feet, were drilled for the purpose of producing gas. Seven of these wells, which were drilled within a small area just north of the crest of the anticline, produced an average of 13,000 feet of gas per day, and an average of 1 bbl. of 56 degrees Baume gravity oil. The most prolific sands were encountered from 300 to 400 feet. The large amount of water which was present in the wells, could not be shut off, and considerable difficulty was experienced in drilling through the surface boulders with the light percussion type rigs. The supply of gas, however, was sufficient to warrant the laying of 25 miles of 2½-inch line to supply the nearby cities of Ventura, Oxnard and Santa Paula, but it was necessary later to introduce artificial gas in order to supply the increased demands of these communities. No further attempt was made to secure an additional supply of natural gas until the Southern Counties Gas Co. purchased the gas distributing system in 1919, but in the meantime the State Consolidated, General Petroleum and Shell Oil companies had commenced active drilling in the field. In 1915, the State Consolidated Co. in exploring below the 'Top Gas Zone' encountered a small amount of 50 degree gravity oil and a heavy flow of gas at 2,250 feet in its No. 1 Lloyd. Subsequently other wells were drilled into the 'Light Oil Zone,' all encountering considerable gas at great pressures. The most extreme difficulties were experienced in attempting to produce from this zone because of the gas and the failure to locate a continuous stratum of clay or shale to afford a suitable place for cementing off the large flow of upper waters. One well, upon entering the top sands of the zone, blew out destroying the rig and subsequently forming a crater 100 feet in diameter at the surface, while another well after being drilled to the bottom of the zone blew out and later the flow of mud, water, oil and gas broke through behind the casing and formed a crater after the rig had been pulled down. Another of the early wells upon reaching a depth of 1,368 feet and being shut in, flowed mud, water and gas at the surface at a distance of 400 feet from the well.

"While these early wells served as an example of the hazardous drilling conditions in the upper zone, yet they have proven beyond doubt that this zone can be drilled at some future time when the lower sands have been exhausted, and a great volume of gas obtained. A conservative estimate of the future gas production of these wells is 300,000 feet per day per well."

LONE STAR-UPHAM WAR

OKLAHOMA CITY, Okla., Sept. 4.—After a Texas court recently dissolved an injunction that forbade the Lone Star Gas Co. laying lines in the town of Vernon to install a system of natural gas distribution the city commission of Vernon met and revoked the company's franchise. The company continued work, however, claiming rights under a franchise granted some time ago to G. M. Church of Wichita Falls, which the Lone Star claims to have acquired. The Upham Gas Co. which has a franchise in Vernon claims the Church franchise is invalid.

These are late developments in the contest for control in gas distribution in a number of west Texas towns. Both companies are laying pipelines to Vernon from Panhandle gas fields. The Lone Star Co. says it will be distributing gas in Vernon by September 28.



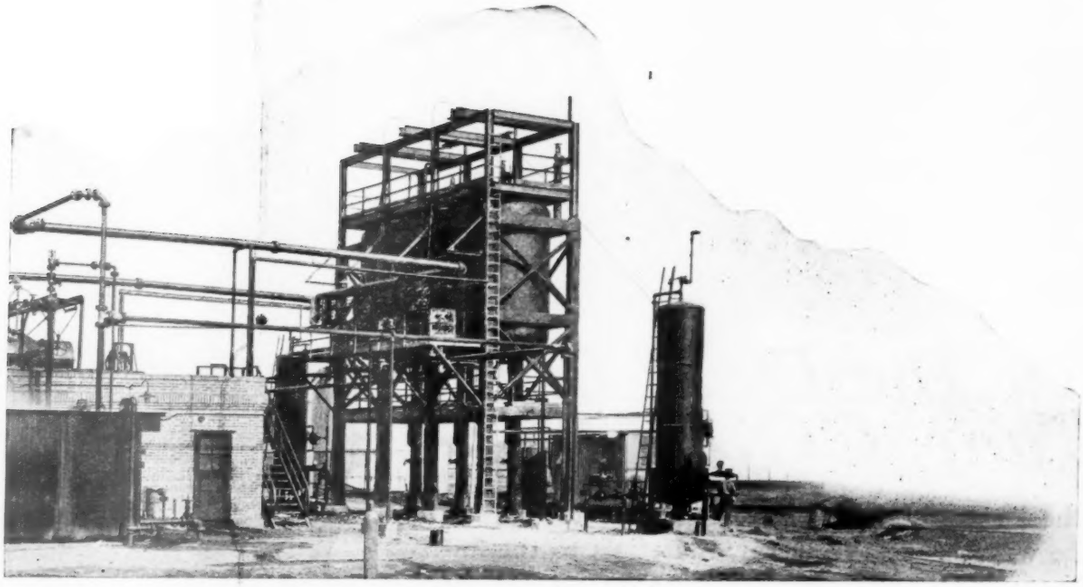
Cross Cracking Units (above) directly connected with—

"Vapor Phase Refining Is Now Being Used

Argentine Government Oil Fields, Inc., La Plata, Argentine
Barnsdall Refineries, Inc., Barnsdall, Oklahoma
Barnsdall Refineries, Inc., Okmulgee, Oklahoma
Compagnie Belge du Gaz Catalytique, Brussels, Belgium
Kanotex Refining Company, Arkansas City, Kansas
Lubrite Refining Company, East St. Louis, Illinois

THE GRAY PROCESSES CORPORATION
961-975 FRELINGHUYSEN AVENUE
NEWARK, N. J.

"Vapor Phase Refining delivers the full yield of gasoline produced in the Cracking Process as a refined product of superior quality."



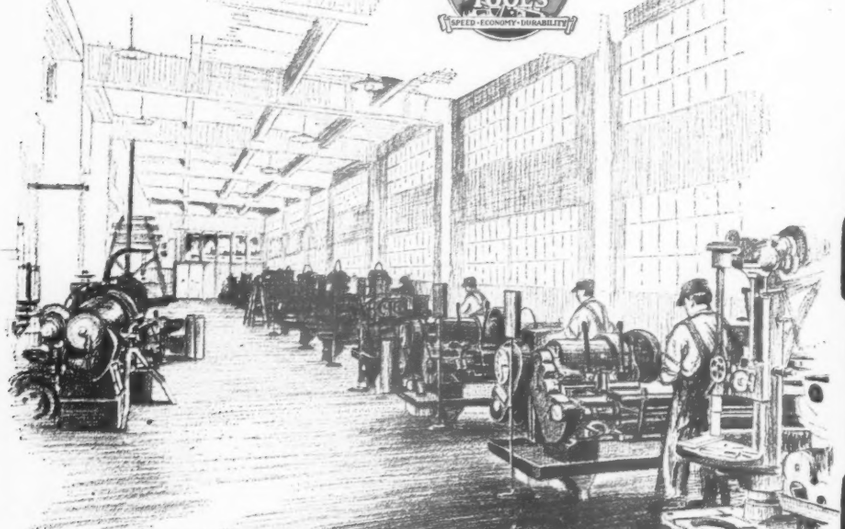
Gray Polymerizers (above)

or Installed by the Following Companies"

Marland Refining Company, Ponca City, Oklahoma
McColl Bros., Ltd., Toronto, Ontario
Standard Oil Company of New York, Brooklyn, New York
Sun Oil Company, Marcus Hook, Pennsylvania
White Star Refining Company, Wood River, Illinois
Vacuum Oil Company, Paulsboro, New Jersey

THE GRAY PROCESSES CORPORATION
961-975 FRELINGHUYSEN AVENUE
NEWARK, N. J.

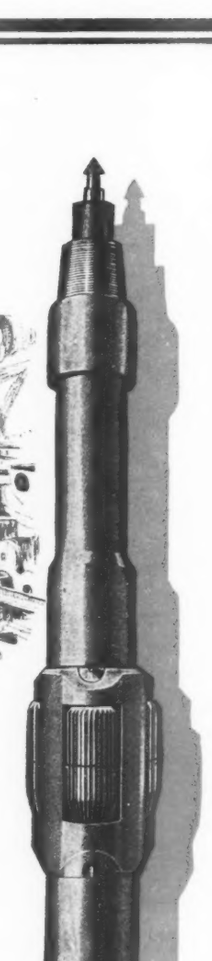
REED ROTARY DRILLING TOOLS
SPEED - ECONOMY - DURABILITY



It's The Final Check That COUNTS ~

Checked and rechecked; tested and retested—all the way through from raw materials to the finished product—is each step in the making of every Reed Tool.

Each forging or machining operation; each heat; each assembly—must stand rigid test. Highly-trained inspectors, equipped with microscopes, micrometer-calipers, precision blocks, thread standards, master gauges, Brinnell Testing Machine, Shore Scleroscope, and other testing devices follow through, from department to department; and their final inspection insures that when Reed Tools leave our Plant, they are perfect tools—and parts are always interchangeable in the field.



REED WIRE-LINE BIT
This bit can be placed and replaced in cutting position at the bottom of the hole by the use of a wire line. No need to pull the drill stem. The saving is obvious.

Reed Roller Bit Company

HOUSTON LOS ANGELES

GAS HAZARD WARNING ISSUED TO THE PUBLIC

(Continued from Page 105)

such as riveting. Tests by actual analysis of air from the cleaned bunkers are made before repair work involving heat or flame is started. For making such tests, the Bureau of Mines has developed the portable Burrell gas indicator, with petroleum vapor scale.

With the growth of the by-product coking industry an increasing quantity of benzol-blend motor fuels has come into use. These fuels have definite antiknock properties and therefore make desirable additions to our motor-fuel supply. Benzol is also used as a solvent in many industries. It is a volatile liquid, similar in this respect to gasoline. It likewise forms explosive mixtures of vapor with air, but its vapor on inhalation is poisonous. Low concentrations, if inhaled for long periods, destroy the blood cells and produce a chronic anemic condition. There is no danger to the user of benzol blends for motor fuel, excepting the usual carbon-monoxide hazard in the exhaust. Workers in the benzol plants should be safeguarded as far as possible by the installation of adequate mechanical ventilation, and these workers should also be given monthly medical examinations so that incipient benzol poisoning may be detected. Prospective appliances for benzol are the same as for gasoline.

Street Manholes

Under the subject of combustible hazards, the explosion and asphyxiation hazards in street manholes and sewers may be included. Such explosions occur from time to time in most cities, and are commonly caused by the accumulation of natural or manufactured gas from leaky mains, or in the case of sewers, by drainage of gasoline or volatile inflammable solvents into the sewers. In cities using manufactured gas the danger from carbon-monoxide poisoning is also considered by workmen who must enter these manholes. As a rule, manufactured gas can be detected by its odor and by tests for carbon monoxide, but natural gas may be present in explosive quantities without giving off much odor. Tests for gas should always be made before entering manholes and if gas is present, the manhole should be ventilated with portable blower and canvas pipe before entering it to begin work.

The oxy-hydrogen flame has been used for lead burning for many years, but in recent years the use of compressed oxygen with compressed acetylene, ethylene and compressed liquid hydrocarbons from natural gas or cracked hydrocarbons has become well-nigh universal in the production and fabrication of iron and steel. In fact, compressed oxygen is used in almost all industries. Gases for these cutting and welding torches are transported and used from steel containers in which they are confined under high pressures. Acetylene is confined under lower pressures in solutions of acetone and other solvents, because of its susceptibility to explode when put under pressure by itself. Other heavy hydrocarbons from natural gas or cracked products of natural gas or petroleum are compressed to the liquid state and confined in steel cylinders. All of these combustible liquids gasify on release of pressure and are used for high-temperature flame torches in conjunction with compressed oxygen. All containers for compressed gas should be tested by hydraulic pressure at higher pressure than that for which they are to be used. They must be absolutely clean before charging them with gas. Oxygen containers must be absolutely free from even traces of oil, organic matter, or in fact, any combustible substance. Compressed oxygen is a very dangerous substance. An oxygen cylinder containing no more than a film of oil on its inner surface is just as truly an explosive as nitroglycerin.

Ammonia and sulphur dioxide are the gases commonly used in refrigeration. Neither is poisonous in low concentrations, but they are both strongly irritating to the eyes and membranes of the throat so that one has ample warning of their presence. Most persons can detect as little as 5 to 15 parts of sulphur dioxide per 1,000,000 parts of air by odor and eye irritation; 0.05 per cent of sulphur dioxide is acutely pungent and produces a sense of suffocation. 0.2 per cent is intolerable.

Further details regarding the hazardous gases commonly used in the industries and the home are contained in Information Circular 6009, copies of which may be obtained from the Bureau of Mines, Department of Commerce, Washington, D. C.

KANSAS FIELDS

(Continued from Page 44)

1, C SE SE, Section 33-26-3, is spudded. Sinclair Oil & Gas Co.'s No. 1, SW cor. SE SW, Section 14-27-7, is spudded. Sinclair Oil & Gas Co. and the Empire Gas & Fuel Co.'s No. 12, NW cor. NE SE, Section 35-27-4, is spudded.

Sumner County

Roxana Petroleum Corp. has the rig up for No. 3 Churchill, NE cor. SE SW, Section 25-31-2 in Sumner County. No. 2, SW cor. NW SE, Section 25 31-2, is spudded. Wentz Oil Corp.'s No. 1, NW cor. SW SE, Section 25 31-2, is spudded. Sinclair Oil & Gas Co. has built the rig for No. 3 Holtz, SW cor. SE SE, Section 24-33-2.

Phillips County

In the northern part of the state, the Prairie Oil & Gas Co. and the Phillips Petroleum Co. have a dry hole in No. 1, C S half SE, Section 13-5-18w, Phillips County, which is abandoned at 3,985 feet.

Rice County

Prairie Oil & Gas Co.'s No. 3-A Welch, NW cor. NE SW, Section 35-20-6w, Rice County, is rigging up. T. B. Slick is drilling at 800 feet in No. 1 SE cor. NW SE, Section 25-26-9w.

Prairie Oil & Gas Co.'s No. 3-A Welch, at 2,125 feet in No. 3 Welch, NW cor. NE SW, Section 35 20-6w. Yonkers and others' No. 1 NE cor. NE, Section 3 21-6w, had sand at 3,375-3,485 feet and made 75 bbls. a day naturally. Stearns & Streeter's No. 1, SE cor. SE, Section 17-21-6w was dry and abandoned at 3,804 feet. Tatlock and others No. 1, SE cor. SW, Section 30-26-6w was dry and abandoned at 4,196 feet.

Cowley County

Roxana Petroleum Corp. has a rig up for No. 1 Carr, NW cor. NW NW, Section 28-30 3, in Cowley County. Lewis Oil Co. has spudded No. 10 Roberts, SE cor. SW SW, Section 31-30 6. Tidal Oil Co. is drilling at 700 feet in No. 1, CNL NW NW, Section 17-31-6.

The Carter Oil Co.'s No. 10, SW cor. NE SE, Section 19-32-3 had sand at 3,432-35 feet and made 250 bbls. of oil and 50 bbls. of water the first 24 hours. Lewis Oil Co.'s No. 2, NW cor. NW, Section 30-32-5, is dry and abandoned at 3,085 feet. J. A. Hull Co.'s No. 16, NE cor. NE, Section 24-32-4 made 200 bbls. after a shot of 60 quarts in sand at 1,455-65 feet.

Chautauqua County

Braunk and others' No. 1, SE cor. NE, Section 9-34-9, Chautauqua County, made 40 bbls. after a shot of 60 quarts in sand at 1,676-88 feet. T. B. Slick's No. 3 Fisher, NW cor. SW NW, Section 10-34-9, made 10 bbls. after a shot of 60 quarts in sand at 1,666-73 feet.

Lincoln County

D. J. Manhall and others have a dry hole in No. 1, NE cor. NE, Section 9-12-6, Lincoln County. D. M. Hennessy and others' No. 1 Foster, NE cor. NW, Section 30-13 6, is dry and abandoned at 2,412 feet.

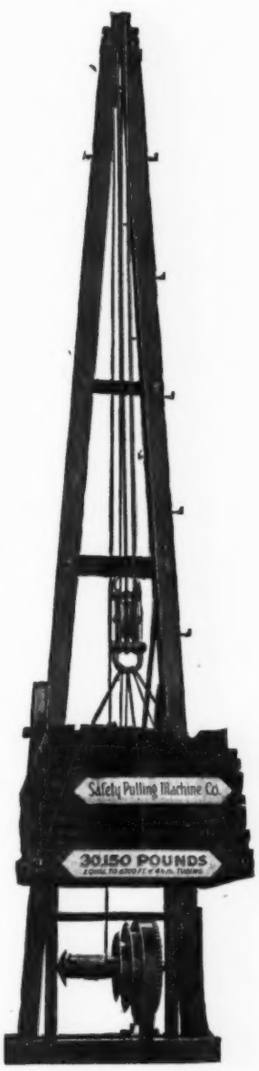
Elk County

Southwestern Gas Co.'s No. 6, SE cor. NW, Section 14-31-10, Elk County, had sand at 1,337-48 feet and made 100 bbls. naturally. Watchorn Oil & Gas Co. has abandoned the location for No. 1, SW cor. NE, Section 11-31-9. Southwestern Gas Co.'s No. 2, CEL NE SW, Section 14-31-10, had sand at 1,331-41 feet and is good for 75 bbls. Theta Oil Co.'s No. 1, SW cor. SW, Section 23-31-10, made 160 bbls. from sand at 1,603-20 feet.

Less than an inch deflection on 32,844 lbs. net weight—what better proof could you have of the great pulling strength of the

Eclipse Deepwell Pulling Machine

to give dependable service with absolute safety



Specifications Deepwell

Eclipse Deepwell up to 8000 ft. 2" Tubing, Weight 3645

Mast 8x10x36 ft., Douglass Fir A-Style Two Wheel Truck, two 16" Bronze bearing crown pulleys, 2½ Steel Pin mounted in malleable boxings. Large supporting plate 16" dia. between crown pulleys, eliminating any chance of bending pin.

Reel or Drum; 32 lb. 8¼ casing filled with concrete for winding drum, differentials banded with 3/16 band iron, brake surface 6"x40", choke brake style same as Star drilling machine.

The whole reel assembly is mounted on 2¾ square steel shaft extending clear through reel, secured by three heavy castings.

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Cause for *Action*

If you, or your men, have the time and money to worry, fuss and fret with balky pumps along with your other work, you are different than most people.

You can free yourself of this expense.

You know as well as we do that it is false economy to eternally tinker with your pumps.

The principal thing is to get the right pump for your conditions.

There is a difference in pumps. Some are made to do little else than sell. Others are the sum of much thought and experience, and are made to do their work well for years and years.

TRANSIT PUMPS are *finished* pumps from design to skids. For that reason they require the very minimum of attention, and are only subject to long deferred wear and tear.

After all, it's the repair bill that determines the cost.

NATIONAL TRANSIT
PUMP & MACHINE CO.
OIL CITY, PA.

NEW YORK PHILADELPHIA PITTSBURGH CLEVELAND
DENVER HOUSTON TULSA

SOUTHWEST WILDCATS

(Continued from Page 46)

dicated in 1920 when the Kleberg County Oil & Gas Co. drilled a gas well that with the aid of other wells drilled since has supplied Kingsville with natural gas up to this time. The R. J. Kleberg No. 2, the latest to be completed by the Humble is reported pumping about 60 bbls. a day free of water and the Flato well thought for a time in serious danger of being lost has been reconditioned and is in good shape and pumping 30 bbls. a day.

LaSalle County

DeLange-Eiser Development Co. is drilling at 1,320 feet in the base of the Yegua and coring at frequent intervals expecting to pick up production. The Yegua is producing in the Mirando fields.

Medina County

The most interesting test in Medina County the past week was the No. 1 of the Schermerhorn on the Mrs. Peter Jungmann tract in Survey No. 31, located a little southeast of Noonan which at 1,616 feet got an oil showing of importance. The hole on Saturday after being bailed all Friday night was standing 400 feet in fluid which was mostly oil, which from appearances is high gravity. It topped the Georgetown at 1,628 feet and drilled 12 feet in when it encountered soft formation for six feet. Schermerhorn drilled two other wells in the same general area which at about 800 feet made small wells estimated at about 2 bbls. each. The Texas Company is rigging up in its No. 1 Viola Wilson in P. E. Durst Survey. Western Gas & Fuel Co. tested salt water but showed a little oil of high gravity at 1,043 feet in its No. 1 Chandler in Durst Survey No. 13, located a little south of the Henderson & Holden gassers on the Adams tract. The same concern is drilling at 700 feet in the No. 1 Adams off to the northeast. Witherspoon Oil Co. has spudded in its No. 1 Adams off to the northeast of the Henderson & Holden gas wells. Finnell and others have a showing of oil at 475 feet in the No. 1 Fohn in Survey 115 with the tools on top of a sand. He is coring the sand to find the thickness and may set and test. Pat Armstrong's No. 1 Lacey is drilling at 600 feet, the location being a little northwest of Hondo. Winona Oil Co.'s No. 1 Long in the same area is drilling below 250 feet. J. R. McCaldin's No. 1 Thompson, west of Devine, has been abandoned at 3,012 feet having topped the Edwards limestone but failed to get production. Ina Oil Co. is preparing to bail the No. 1 Hoffman on Survey 535 at a depth of 2,026 feet. It is in the top of the Edwards and recently completed a bad fishing job. Ina Co.'s No. 1 Finger on Survey 746 at 800 feet tested out about 1,000,000 feet of gas and is drilling deeper. The United North & South Oil Co. which recently completed a dry hole south of Hondo is moving to the west and will drill on the Saathoff farm south of D'Hanis.

McMullen County

Coyle-Concord Oil Co. is rigging up on No. 1 Mat Martin in the southwestern part of McMullen County. George M. Ball is shut down at 1,200 feet in No. 1 Kuykendall in northwestern McMullen. Eugene Sights with a bad fishing job has seemingly lost the No. 1 Franklin in McMullen County a little north of Tilden at a depth of 2,230 feet and is moving over about 100 feet and will start another test. This test had quite a showing of oil at the depth where it was lost.

Webb County

On Block 5, Survey 3, Cole Petroleum Co. in its No. 10 "B" Benavides is drilling at 2,826 feet. Casing has been set at 2,478 feet. On its No. 9 "A" Benavides on Block 7 casing was set at 2,865 feet and drilling in sand. Wheatley and others on Block 7, Survey 1,618 in No. 1 Reiser have cleaned the hole after a fishing job, and have cemented, and are waiting for it to set. Hadley-Marland's No. 1 De Spain on Survey 49 is drilling at 1,400 feet. Maddox and others in the No. 1 Laurel are standing at 1,440 feet waiting for drill stem. National Refining Co.'s No. 2 Benavides in Survey 700 is drilling at 3,525 feet. Creswell-Fallin's No. 1 A. S. Billings, Block 1, Section 71, is at 2,503 feet fishing for drill stem. Magnolia Petroleum Co. in its No. 1 Neal on Block 12 is drilling at 2,700 feet and on Survey 611 in No. 1 Page-Garcia is ready to spud in. Trees Oil Co. on Survey 10 in No. 1 Billings is drilling at 400 feet. Neal-Ramsland and others on Survey 309 have abandoned the Lopez well at 2,633 feet. Lane-The Texas Company's No. 1 in the city limits of Laredo is drilling at 2,600 feet.

Jim Hogg County

On Survey 287, Block 13, Moody Oil Corp. in No. 1 Palacious is standing in hard rock at 1,600 feet. Hazlitt-Simmons' No. 1 Schroder on Block 10 is standing at 100 feet. Hoad and others on Block 257 in No. 1 Palacious are drilling at 1,410 feet. National Oil Co. on the Wilbur Allen ranch, Block 3 in the No. 1 Allen is drilling in sand at 2,180 feet. O'Byrne and others, in No. 1 Palacious on Block 14 are drilling at 1,260 feet. H. J. Porter-Smilock have made location for their No. 1 Garcia on Survey 38, 2,650 feet from the north and west lines.

Duval County

Humble Oil & Refining Co. is drilling at 22 feet in No. 10 Singer on the northern end of Survey 4, and on Survey 255 in No. 5 Schallert drilling at 2,621 feet with oil showings. Simms Oil Co.'s No. 1 Schallert on Survey 241 is fishing for drill pipe at 3,758 feet. Humble-Reiter-Foster are moving on for a test on Survey 406, in No. 1 Kohler, and also for No. 2 Kohler on Survey 168. Maddox & Goodman near the Brooks County line in Survey 18 have made location for their No. 1 Carlyle. National Oil-Lewis Oil have made location in Survey 668 for their No. 1 Dinn, which is 200 feet from the east line and 200 feet from the south line. Simms Oil Co.'s No. 2 Dinn in Survey 62 is drilling in sand at 2,624 feet. Humble Oil & Refining Co.'s No. 1 Dowdy (fee) is drilling at 2,951 feet, and Houston Oil Co.'s No. 1 Beall is standing at 2,445 feet. These last two wells are in the north part of the county.

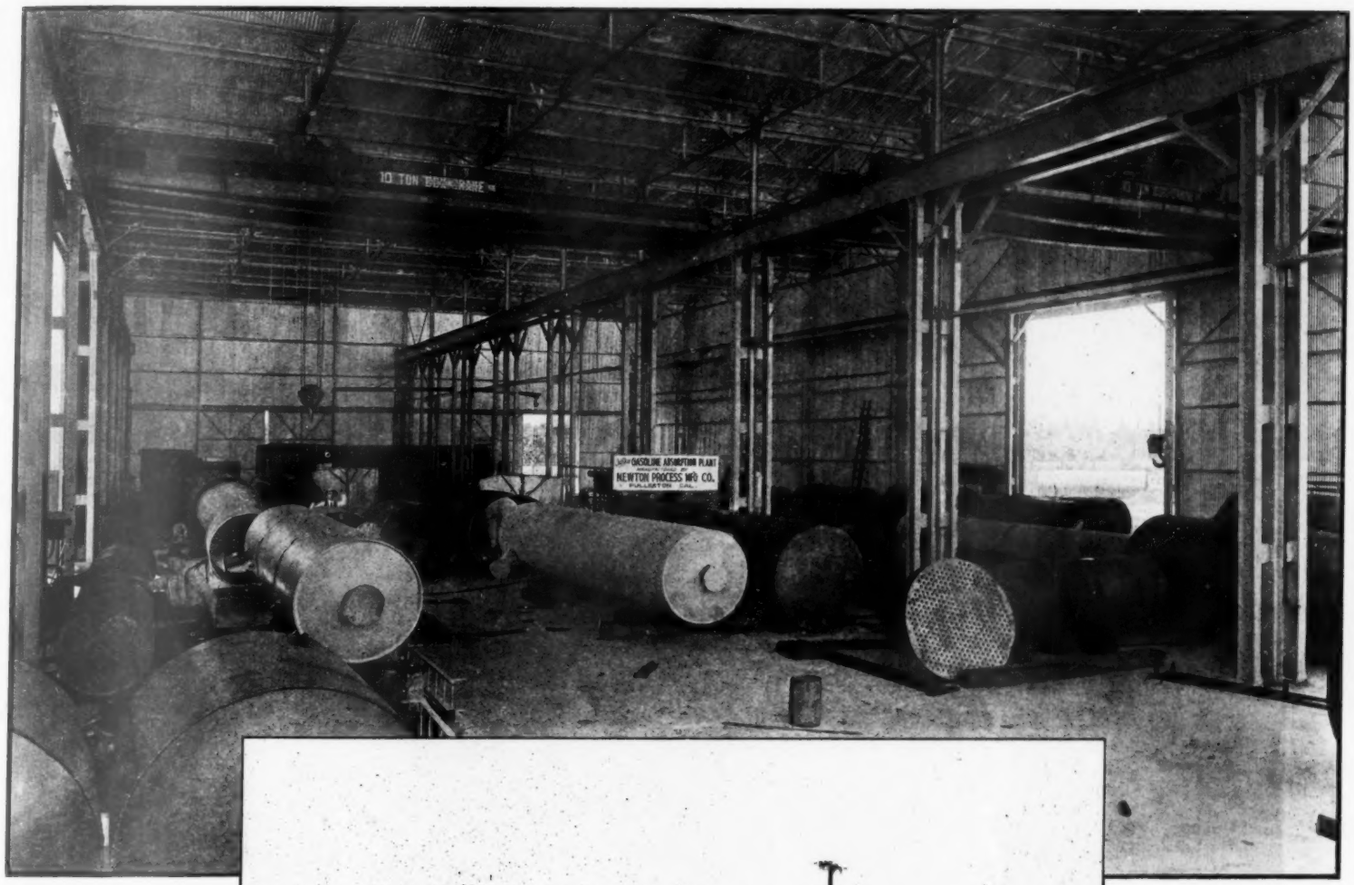
CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Imports of crude and refined oils at the principal United States ports for the week ended August 28 totaled 1,227,000 bbls., a daily average of 175,286 bbls., compared with 1,161,000 bbls., a daily average of 165,857 bbls. for the week ended August 21, and a daily average of 201,643 bbls. for the four weeks ended August 28.

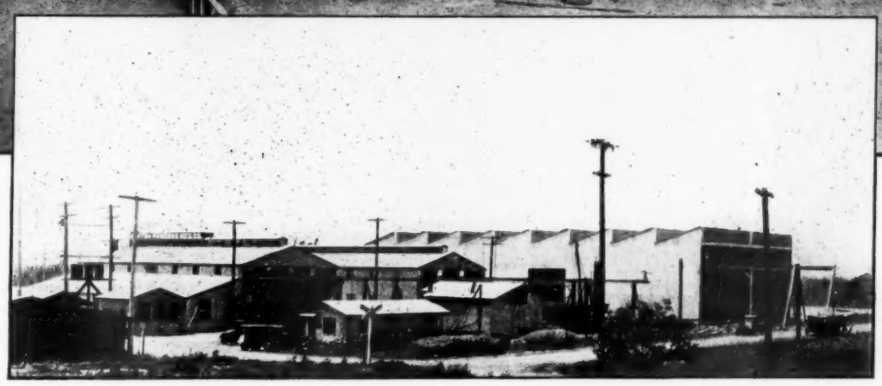
At Atlantic Coast Ports—	
Baltimore	162,000
Boston	60,000
New York	437,000
Philadelphia	70,000
Others	95,000
Total	824,000
Daily average	117,715
At Gulf Coast Ports—	
Galveston district	127,000
New Orleans and Baton Rouge	226,000
Port Arthur and Sabine district	50,000
Total	403,000
Daily average	57,571
At All United States Ports—	
Total	1,227,000
Daily average	175,286
Daily average four weeks ended	201,643

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended August 28 totaled 618,000 bbls., a daily average of 88,286 bbls., against 790,000 bbls., a daily average of 112,857 bbls. for the week ended August 21, and a daily average of 97,679 bbls. for the four weeks ended August 28.

At Atlantic Coast Ports—	
Baltimore	70,000
New York	166,000
Philadelphia	159,000
Others	223,000
Total	618,000
Daily average	88,286
At Gulf Coast Ports—None.	
Total Atlantic and Gulf Coast ports	618,000
Daily average	88,286
Daily average four weeks ended	97,679
Distribution of total California oil receipts is as follows:	
Crude	234,000
Gasoline	70,000
Gas oil	244,000
Fuel oil	70,000
Total	618,000



Above is an interior view of the new unit designed and built by Austin for the Newton Process Manufacturing Co., at Fullerton, Cal. Note the two 10-ton traveling cranes.



General view below shows in background the large new building with saw-tooth construction for the manufacture of portable gasoline absorption plants.

Newton Process Expands in New Austin-built Plant

A NEW plant for the manufacture of portable gasoline absorption plants has recently been completed by Austin for the Newton Process Manufacturing Company, Fullerton, California. In accepting the plant, the owners write:

"Now that our new buildings are completed and placed in use, we wish to express to you our appreciation for the very excellent manner in which you have handled the details of the improvement from the beginning of our negotiations until completion of the work.

"You have delivered to us an excellent steel structure, well within our estimate cost, and with every working condition ideally arranged for efficient operation."

This is typical of the satisfaction which has been expressed by leaders in the oil and gas industry for years with respect to the building service rendered by The Austin Company. In many cases Austin handles the construction complete, as in this instance, either furnishing the designs or working from those of the owner. The complete project is handled by Austin under one contract, with guarantees as to total cost, delivery date, (with bonus and penalty clause if preferred) and quality of materials and workmanship.

In other cases, Austin furnishes the steel and other essential materials for field buildings, delivering them promptly to the site, ready for erection by the owner.

Austin's nation-wide organization, including permanent offices within close working distance of the principal oil fields, makes possible a speed and thoroughness which are important considerations to the executive planning new construction of any kind.

Wire, phone the nearest Austin Office, or mail the coupon for approximate costs and valuable building data.

Complete Refineries
Tank Car Repair Shops
Blacksmith Shops
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Warehouses
Pumping Stations
Machine Shops
Field Warehouses
Engine Houses, etc.

THE AUSTIN COMPANY - *Engineers and Builders* - Cleveland

New York, Chicago, Cleveland, Detroit, Philadelphia, Portland, Seattle, Miami, Birmingham, Pittsburgh, St. Louis

The Austin Company of California: Los Angeles and San Francisco

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Complete Building Service

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We are interested in the erection of a _____
_____ Building
_____ x _____, number of stories _____
You may send me a personal copy of "The Austin Book of Buildings," free to Industrial Executives.
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SUPE
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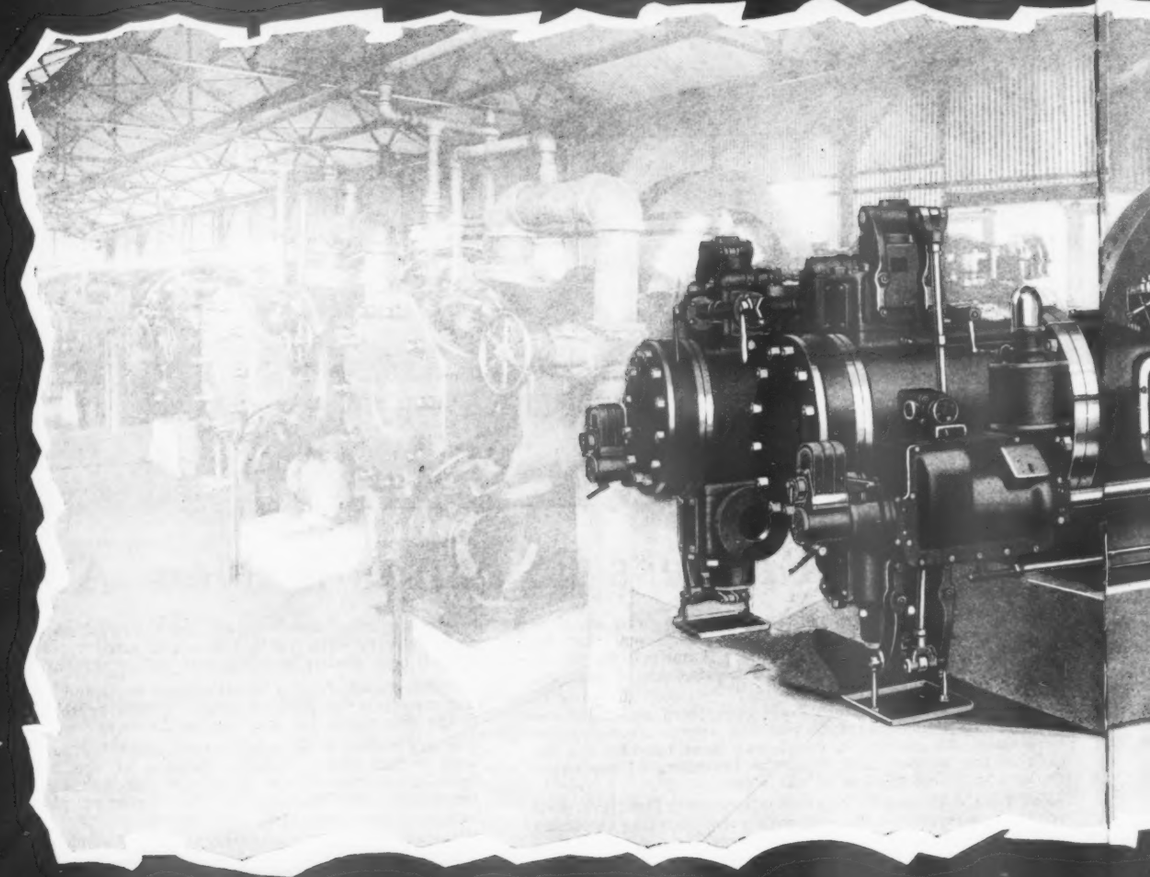

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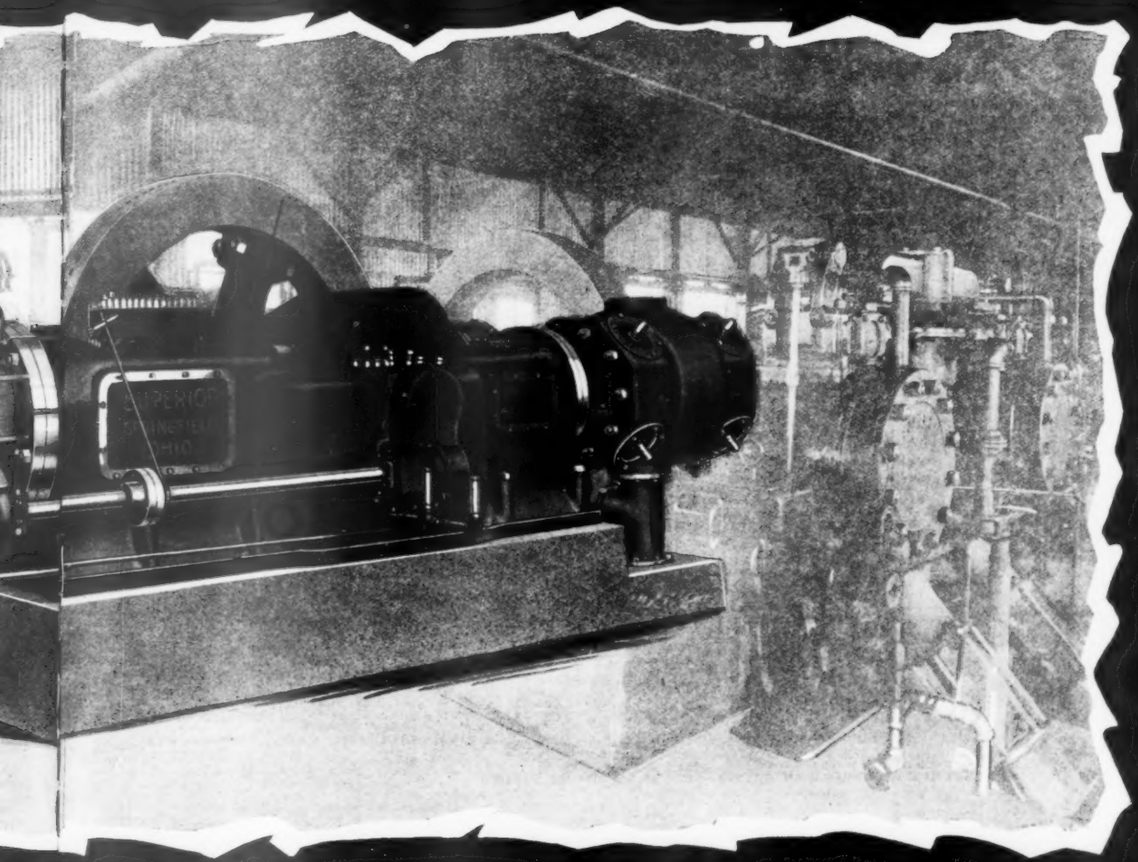

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Government's Crude and Refined Oil Statistics for 1925

By G. R. Hopkins
Petroleum Economist, United States Bureau of Mines

Crude Petroleum — According to final figures compiled by the Bureau of Mines, Department of Commerce, the production of crude petroleum in the United States for 1925 amounted to 763,743,000 bbls. This represents an increase over 1924 of 7.0 per cent and exceeds by over 30,000,000 bbls. the previous record figure made in 1923. Of the total production 620,367,000 bbls., or 81 per cent, was light oil and 143,376,000, or 19 per cent, heavy oil.

All the major producing areas of the country, with the exception of the Rocky Mountain district and the central states, that is, Ohio, Indiana and Illinois, registered gains over 1924. California and the Appalachian area made slight gains but production in the Mid-Continent, which comprises over half of the total for the country, increased 13.0 per cent. It is worthy of note, however, that practically all of this gain was made in states other than Oklahoma, the largest producer in this field.

Stocks Consistently Reduced

In general, stocks of crude petroleum east of California were consistently reduced during 1925. On January 1, 1925, these stocks amounted to 321,114,000 bbls. as compared to 299,369,000 on December 31, a decrease of 7.3 per cent. All crude stocks, that is, refinery, pipeline, tank farm, foreign crude petroleum held by importers, and producers' stocks shared in this decline. On the other hand, stocks of both light and heavy crude petroleum (including fuel oil) in California were increased.

Imports Decreased

Imports of crude petroleum during 1925 amounted to 61,824,000 bbls., a decrease from 1924 of 20.5 per cent. Mexico, with exports to the United States of 55,049,000 bbls., continued to rank as the most important outside influence as to supply. Imports from Venezuela amounted to nearly 5,000,000 bbls., as compared to a little over a million barrels in 1924.

Value of the Crude

The total value at the wells of the crude petroleum produced in the United States during 1925 was $1,284,960,000, an increase over 1924 or 25.6 per cent. The average per barrel was $1.68 as compared to $1.43 in 1924, a gain of 25 cents. The only value below $1 was in Arkansas, where the average per barrel was 89 cents as compared to 94 cents in 1924. This was the result of an overproduction of heavy oil. With the exception of Alaska, where conditions are unusual, New York ranked first in average value, its production in 1925 being valued at $3.70 per barrel at the well.

On December 31, 1925, there were 306,100 producing oil wells in the United States, which is an increase of 7,000 over the total for 1924. The average production per well per day at the end of 1925 was 6.5 bbls., as compared to 6.2 in 1924. The total number of wells drilled in 1925 was 25,623, of which 16,559 were oil wells, 2,330 gas wells and 6,734 were dry holes.

Refined Products

According to final figures just compiled, there was run to stills in the United States in 1925 698,582,000 bbls. of domestic crude petroleum and 41,338,000 bbls. of foreign crude petroleum, a total of 739,920,000 bbls. This is an increase over 1924 or 96,201,000 bbls., or 15 per cent.

From the total crude petroleum run to stills in combination with unfinished oils and natural-gas gasoline, there was recovered 259,601,000 bbls., or 35 per cent of gasoline; 59,689,000 bbls., or 8 per cent, of kerosene; 364,991,000 bbls., or 49 per cent, of gas and fuel oils; and 31,055,000 bbls., or 4 per cent, of lubricants. Losses in refining in 1925 totaled 22,914,000 bbls., which is equivalent to 3 per cent of the crude oil run to stills.

Domestic demand for gasoline amounted to 223,865,000 bbls. as compared to 185,003,000 bbls. in 1924, a gain of 21 per cent. Exports of gasoline were 31,497,000 bbls., an increase over 1924 of 9 per cent. Stocks on hand at the refineries at the beginning and end of the year were 30,823,000 and 38,875,000 bbls. respectively.

The statistical position of kerosene underwent very little change during the year. Production and exports fell off slightly but domestic demand increased and stocks were reduced.

Both production and domestic demand for lubricants registered moderate gains over 1924. Exports were higher than in 1924, but stocks were increased by over 800,000 bbls.

As in the case of lubricants, both the production and demand for wax increased in 1925. Exports fell off and stocks again passed the 100,000,000 pound mark, amounting to 116,391,000 pounds on December 31, 1925.

The production of the minor products, coke and asphalt, amounted to 991,000 and 2,677,400 tons, respectively. Although both these totals represent gains over 1924, that for coke, of 30 per cent, is of the greatest importance since it is a fair barometer of the growth of cracking.

CRUDE PETROLEUM PRODUCED IN THE UNITED STATES IN 1925 BY STATES

(Thousands of barrels of 42 U. S. gallons.)

State—	January	February	March	April	May	June	July	August	September	October	November	December	1925	1924
Arkansas	3,223	2,917	3,781	5,710	10,187	9,348	8,163	7,974	7,028	6,608	6,165	6,294	77,398	46,028
California*	19,004	17,104	18,893	18,222	19,116	19,451	20,519	21,123	20,278	20,157	19,192	19,433	232,492	228,933
Colorado	63	57	86	68	75	59	96	103	143	149	169	158	1,226	445
Illinois	662	604	728	586	661	665	690	647	667	677	639	637	7,863	8,081
Indiana	71	68	68	76	70	75	76	67	68	66	60	64	829	935
Southwestern	56	53	50	58	54	58	59	51	54	54	49	53	649	666
Northeastern	15	15	18	18	16	17	17	16	14	12	11	11	180	269
Kansas	2,455	2,534	2,835	2,942	3,448	3,563	3,613	3,604	3,424	3,458	3,267	3,214	38,357	28,836
Kentucky	575.7	544.4	592.4	579.5	580.6	567.2	598.6	566	561.6	552.8	534.2	616	6,759	7,407
Louisiana	1,716	1,536	1,715	1,705	1,767	1,663	1,718	1,724	1,675	1,722	1,655	1,676	20,272	21,124
Gulf Coast†	224	196	227	215	260	214	260	268	296	355	364	348	3,227	2,487
Rest of state	1,492	1,340	1,488	1,490	1,507	1,449	1,458	1,456	1,379	1,367	1,291	1,328	17,045	18,637
Montana	243	232	239	247	295	327	366	406	393	469	488	386	4,091	2,815
New Mexico	20	16	36	57	57	76	105	127	133	151	145	138	1,060	98
New York	125	122	139	134	138	146	150	148	147	152	144	150	1,695	1,440
Ohio	560	543	603	619	594	634	634	613	615	621	564	612	7,212	6,811
Central and eastern	409	393	438	447	428	453	458	447	450	460	423	466	5,272	4,793
Northwestern	151	150	165	172	166	181	176	166	165	161	141	146	1,940	2,018
Oklahoma	15,002	13,989	14,776	14,818	14,775	14,684	14,777	14,797	15,228	15,020	14,789	14,113	176,768	173,538
Osage County	2,558	2,210	2,490	2,475	2,451	2,429	2,451	2,384	2,307	2,262	2,111	2,092	28,220	38,963
Rest of state	12,444	11,779	12,286	12,343	12,324	12,255	12,326	12,413	12,921	12,758	12,678	12,021	148,548	134,575
Pennsylvania	613	593	684	697	669	700	708	704	701	710	651	667	8,097	7,486
Tennessee	.3	.6	.6	1.5	1.4	1.8	1.4	2	1.4	2.2	4.8	6	24	10
Texas	13,282	11,271	13,119	12,577	13,486	12,430	12,557	11,954	11,341	11,332	10,662	10,637	144,648	134,522
Gulf Coast†	1,921	1,784	2,568	2,657	2,995	2,716	2,852	2,627	2,582	2,548	2,313	2,322	29,885	26,082
Rest of state	11,361	9,487	10,551	9,920	10,491	9,714	9,705	9,327	8,759	8,784	8,349	8,315	114,763	108,440
West Virginia	475	446	488	491	477	511	501	476	485	503	436	474	5,763	5,920
Wyoming	2,309	2,197	2,557	2,517	2,452	2,338	2,489	2,564	2,541	2,490	2,360	2,369	29,173	39,498
Salt Creek	1,781	1,663	1,920	1,806	1,654	1,640	1,772	1,881	1,921	1,892	1,785	1,730	21,445	30,874
Rest of state	528	534	637	711	798	698	717	673	620	598	575	639	7,728	8,624
Other‡	1	1	1	1	1	1	1	1	2	2	2	2	16	13
Total	60,400	54,775	61,339	62,048	68,850	67,240	67,763	67,580	65,432	64,842	61,927	61,547	763,743	713,940
Classification by gravity (approx.):														
Light	53,802	48,571	53,597	51,914	53,367	51,915	52,138	52,198	51,559	51,763	49,921	49,622	620,367	.....
Heavy	6,598	6,204	7,742	10,134	15,483	15,325	15,625	15,382	13,873	13,079	12,006	11,925	143,376	.....

*Annual and semiannual figures from California State Mining Bureau. Monthly figures prorated. †Salt dome pools. ‡1924, Alaska and Utah; 1925, Alaska (8,000 bbls.), Michigan (4,000 bbls.), and Utah (4,000 bbls.).

CRUDE PETROLEUM PRODUCED IN UNITED STATES IN 1925 BY FIELDS

(Thousands of barrels of 42 U. S. gallons.)

Field—	January	February	March	April	May	June	July	August	September	October	November	December	1925	1924
Appalachian	2,198	2,099	2,342	2,350	2,294	2,379	2,417	2,333	2,346	2,380	2,193	2,279	27,610	27,056
Lima-Indiana	166	165	193	190	182	198	193	182	179	173	152	157	2,130	2,287
Illinois-S. W. Indiana	718	657	778	644	715	723	749	698	721	731	688	690	8,512	8,747
Mid-Continent	33,533	30,267	33,431	34,880	40,408	38,758	37,716	37,158	35,818	35,237	33,861	33,264	424,331	376,479
Gulf Coast	2,145	1,980	2,795	2,872	3,255	2,930	3,112	2,895	2,878	2,903	2,677	2,670	33,112	28,569
Rocky Mountain	2,635	2,502	2,916	2,889	2,879	2,800	3,056	3,190	3,211	3,260	3,163	3,053	35,554	42,869
California	13,004	17,104	18,893	18,222	19,116	19,451	20,519	21,123	20,278	20,157	19,192	19,433	232,492	228,933
Other*	1	1	1	1	1	1	1	1	1	1	1	1	12	(1)
Total	60,400	54,775	61,339	62,048	68,850	67,240	67,763	67,580	65,432	64,842	61,927	61,547	763,743	713,940

*1925, Alaska and Michigan; 1924, Alaska included with Rocky Mountain.

IMPORTS AND EXPORTS OF CRUDE PETROLEUM*

(Thousands of barrels.)

	January	February	March	April	May	June	July	August	September	October	November	December	1925	1924
Imports	7,025	5,579	6,375	5,482	6,484	5,153	4,155	4,045	4,027	4,367	4,891	4,241	61,824	77,775
From Mexico	6,461	4,951	5,992	4,755	6,083	4,898	3,780	3,638	3,522	4,079	3,599	3,291	55,049	73,979
From Venezuela	353	222	242	517	263	116	375	298	505	288	921	682	4,692	1,186
From Peru	211	406	81	210	.....	139	.....	139	.....	.....	371	268	1,825	2,429
From other countries	.....	.....	60	.....	138	.....	.....	60	.....	.....	.....	.....	258	181
Exports	1,149	1,122	1,058	798	1,356	1,255	1,302	1,465	923	1,299	749	877	13,335	17,973
Domestic oil:														
To Canada	653	546	766	626	642	810	884	1,111	586	1,026	508	758	8,916	10,992
To other countries	481	566	272	149	688	427	386	335	305	252	229	119	4,209	6,613
Foreign oil	15	10	20	23	26	18	32	19	32	12	3	.....	210	368
California crude oil†	239	320	219	162	104	265	282	365	232	517	41	226	2,972	6,642

*Bureau of Foreign & Domestic Commerce. †Included in total exports of domestic crude.

WELLS DRILLED FOR OIL AND GAS IN UNITED STATES IN 1925*

	January	February	March	April	May	June	July	August	September	October	November	December	1925	1924
Oil	884	993	1,091	1,568	1,675	1,709	1,791	1,581	1,504	1,420	1,196	1,147	16,559	14,587
Gas	165	171	185	203	177	184	207	206	183	205	231	213	2,330	2,257
Dry	376	432	492	594	601	578	640	701	590	603	593	534	6,734	5,044
Total	1,425	1,596	1,768	2,365	2,453	2,471	2,638	2,488	2,277	2,228	2,020	1,894	25,623	21,888

*For states east of California, from The Oil and Gas Journal; for California, from the American Petroleum Institute.

STOCKS OF CRUDE PETROLEUM HELD IN THE UNITED STATES

(Thousands of barrels of 42 U. S. gallons.)

EAST OF CALIFORNIA: At refineries. By location of storage:	January 31, 1925	Feb. 28	Mar. 31	Apr. 30	May 31	June 30	July 31	Aug. 31	Sept. 30	Oct. 31	Nov. 30	Dec. 31, 1925	Dec. 31, 1924
East Coast:													
Domestic	8,523	7,734	8,081	8,504	8,200	8,784	8,801	7,122	7,643	6,079	5,134	4,801	8,230
Foreign	2,020	2,446	2,665	1,900	1,859	2,100	2,209	2,370	2,258	2,290	2,550	2,650	1,462
Appalachian	1,282	1,218	1,190	1,210	1,165	1,263	1,307	1,302	1,335	1,374	1,402	1,507	1,306
Indiana, Illinois, etc.	1,855	1,800	1,479	1,574	1,549	1,558	1,438	1,148	924	1,091	1,116	1,318	1,762
Oklahoma, Kansas, etc.	5,507	5,955	4,939	4,868	4,976	5,422	5,290	4,696	4,422	3,793	3,578	3,422	5,458
Texas:													
Inland	1,138	1,228	1,133	1,282	1,139	1,120	1,289	1,131	1,131	984	1,116	944	1,310
Gulf Coast:													
Domestic	4,897	4,688	4,374	4,438	4,821	5,529	5,496	5,153	5,390	5,169	5,329	5,616	4,837
Foreign	543	655	519	556	726	651	663	530	580	610	491	341	358
Arkansas and Inland Louisiana	292	343	413	403	598	678	604	574	716	715	926	656	267
Louisiana, Gulf Coast:													
Domestic	3,755	4,128	4,812	4,660	4,273	3,983	4,533	3,834	3,725	3,384	2,784	3,242	3,763
Foreign	1,623	1,865	1,930	1,787	1,730	1,423	1,421	1,404	1,042	1,095	1,178	1,197	1,474
Rocky Mountain	931	886	1,078	1,262	1,380	1,381	1,456	1,451	1,494	1,419	1,540	1,463	957
Total	32,366	32,946	32,613	32,454	32,415	33,882	34,307	30,715	30,660	28,033	27,144	27,157	31,184
Pipeline and tank farm stocks (net):													
Domestic. By field of origin:													
Appalachian:													
N. Y., Pa., W. Va., E. and Cent. Ohio	7,062	7,111	7,038	6,989	6,952	7,025	6,874	6,854	6,860	6,819	6,924	6,745	7,026
Kentucky	2,268	2,333	2,243	2,146	2,085	1,954	1,902	1,868	1,827	1,706	1,754	1,748	2,266
Lima-Indiana	1,183	1,190	1,151	1,154	1,209	1,150	1,114	1,097	1,100	1,058	1,035	971	1,221
Illinois-S. W. Indiana	10,845	10,813	10,936	10,982	11,060	10,986	10,886	10,954	10,620	10,574	10,577	10,582	10,870
Mid-Continent:													
Okla., Kans.; Cent., N. and W. Texas	175,193	174,275	173,088	171,845	170,860	166,203	163,104	161,629	159,315	159,470	158,368	153,012	176,754
Northern La. and Arkansas	33,680	33,284	32,711	34,007	37,117	39,382	39,603	40,159	41,146	41,462	42,061	42,929	33,804
Gulf Coast	19,076	18,948	19,517	19,676	20,325	20,477	20,951	20,657	20,310	19,981	19,771	19,263	20,200
Rocky Mountain	28,773	28,902	28,956	28,958	28,895	28,756	28,574	28,548	28,580	28,563	28,692	28,995	28,672
Total	278,060	276,856	275,640	275,757	278,503	275,933	273,008	271,766	269,757	269,633	269,182	264,245	280,807
Foreign:													
Atlantic Coast	187	204	256	231	204	120	173	197	143	47	79	104	199
Gulf Coast	406	320	220	492	825	759	743	613	596	480	499	303	535
Total	593	524	476	723	1,029	879	916	810	739	527	578	407	734
Producers' stocks*	8,319	8,256	8,186	8,117	8,047	7,978	7,908	7,838	7,769	7,639	7,630	7,560	8,389
GRAND TOTAL EAST OF CALIFORNIA	319,338	318,582	316,915	317,051	319,994	318,672	316,139	311,129	308,925	305,892	304,534	299,369	321,114
CALIFORNIA:													
Light	41,914	42,450	43,422	44,040	44,600	44,058	43,411	†41,566	43,007	44,059	44,561	44,451	40,541
Heavy (including fuel oil)	58,112	59,279	60,299	62,565	65,481	68,337	72,388	78,507	81,476	83,391	84,373	84,983	55,964

*Figures for December based on reports from companies; other months prorated.
†1,180,000 bbls. refinable crude transferred to heavy crude stocks in August.

INDICATED DELIVERIES OF CRUDE PETROLEUM, EXCLUSIVE OF CALIFORNIA GRADES, TO DOMESTIC CONSUMERS

(Thousands of barrels of 42 U. S. gallons.)

Domestic petroleum by fields of origin:	January	February	March	April	May	June	July	August	September	October	November	December	1925	1924
Appalachian	2,154	1,985	2,505	2,496	2,392	2,436	2,619	2,386	2,380	2,541	2,039	2,464	28,397	26,991
Lima-Indiana	204	159	222	187	127	257	230	200	176	216	175	221	2,374	2,044
Illinois and S. W. Indiana	744	689	656	599	638	798	850	631	1,056	778	686	686	8,811	8,967
Mid-Continent	35,305	31,622	35,258	34,893	38,350	41,216	40,661	38,144	37,212	34,832	34,430	37,819	439,742	368,686
Gulf Coast	3,265	2,164	2,222	2,709	2,602	2,775	2,634	3,185	3,222	3,228	2,884	3,174	34,004	32,709
Rocky Mountain	2,540	2,378	2,868	2,893	2,948	2,945	3,244	3,222	3,185	3,283	3,040	2,756	35,302	24,122
Other	1	1	1	1	1	1	1	1	1	1	1	12	12	(1)
Deliveries and exports	44,213	38,938	43,732	43,778	47,058	50,428	50,239	47,769	47,232	44,879	43,255	47,121	548,642	473,519
Deliveries	43,318	38,146	42,812	43,165	45,832	49,456	49,251	46,688	46,573	44,118	42,559	46,470	538,489	462,556
Foreign petroleum	7,151	5,638	6,403	5,212	6,162	5,285	4,086	4,132	4,066	4,567	4,837	4,412	61,941	78,056
Deliveries of domestic and foreign petroleum	50,469	43,784	49,316	48,377	51,984	54,741	53,337	50,820	50,639	48,685	47,396	50,882	600,430	540,612

(1)Alaska included with Rocky Mountain.

SHIPMENTS OF CALIFORNIA OIL THROUGH PANAMA CANAL TO EASTERN PORTS IN UNITED STATES*

(Units of thousands.)

	January	February	March	April	May	June	July	August	September	October	November	December	1925	1924
Crude oil: Long tons	189	224	211	262	186	152	133	178	136	70	93	187	2,020	5,458
Barrels (approx.)	1,363	1,614	1,522	1,883	1,331	1,092	958	1,283	981	503	666	1,349	14,545	39,300
Refined products: Barrels (approx.)														
Gasoline, naphtha, etc.	297	283	1,145	817	567	1,367	1,496	1,118	553	689	998	960	10,280	2,696
Gas oil	.....	88	.....	186	.....	87	.....	.....	.....	68	76	323	828	.....
Fuel oil	.....	.....	64	.....	.....	.....	.....	.....	.....	75	284	398	821	946
Lubricating oil	68	.....	65	.....	67	.....	123	68	.....	67	.....	68	526	559
Tops	178	265	189	70	.....	85	355	76	96	83	94	86	1,577	†1,114
Total refined products	543	636	1,463	1,073	624	1,539	1,974	1,262	649	982	1,452	1,835	14,032	5,315

*From Panama Canal Record. †Includes 327,000 bbls. unclassified.

VALUE OF CRUDE PETROLEUM AT WELLS, 1924-1925, AND NUMBER OF PRODUCING OIL WELLS IN THE UNITED STATES, DECEMBER 31, 1924 AND 1925

	Value at the Wells				Producing Oil Wells in the United States December 31, 1924 and 1925			
	1924		1925		1924		1925	
State—	Total	Average per Barrel	Total	Average per Barrel	Number of Wells	Aver. per Well per Day (Bbls.)	Number of Wells	Aver. per Well per Day (Bbls.)
Alaska	*	.....	$34,000	$4.25	*	.....	.....	.....
Arkansas	$43,130,000	$0.94	68,880,000	.89	3,050	33.5	4,100	49.5
California	†274,653,000	1.20	†330,610,000	1.42	11,320	53.6	11,070	56.6
Colorado	490,000	1.10	1,810,000	1.48	70	25.8	80	64.1
Illinois	14,220,000	1.76	15,235,000	1.94	16,400	1.2	16,280	1.3
Indiana:								
Southwestern	1,200,000	1.80	1,245,000	1.92	1,020	1.5	990	1.7
Northeastern	520,000	1.93	370,000	2.06	1,120	.5	1,010	.4
Total Indiana	1,720,000	1.84	1,615,000	1.95	2,140	1.0	2,000	1.0
Kansas	44,400,000	1.54	74,410,000	1.94	18,000	4.0	18,600	5.6
Kentucky	14,592,000	1.97	15,682,000	2.32	12,450	1.5	13,190	1.3
Louisiana:								
Gulf Coast	4,050,000	1.63	5,080,000	1.57	200	37.4	260	43.2
Rest of state	26,290,000	1.41	27,420,000	1.61	3,350	13.7	3,490	12.3
Total Louisiana	30,340,000	1.44	32,500,000	1.60	3,550	15.6	3,750	14.4
Michigan	.....	.....	10,000	2.50	.....	.....	*	.....
Montana	3,754,000	1.33	6,420,000	1.57	380	18.9	590	21.1
New Mexico	127,000	1.30	1,815,000	1.71	*	.....	140	31.8
New York	5,245,000	2.64	6,270,000	3.70	15,000	.3	15,580	.3
Ohio:								
Central and eastern	13,135,000	2.74	14,070,000	2.67	20,300	.6	21,120	.7
Northwestern	4,030,000	2.00	4,210,000	2.17	18,000	.3	17,940	.3
Total Ohio	17,165,000	2.52	18,280,000	2.53	38,900	.5	39,060	.5
Oklahoma	272,450,000	1.57	348,230,000	1.97	60,500	8.1	69,400	7.7
Pennsylvania	27,025,000	3.61	29,310,000	3.62	74,350	.3	75,900	.5
Tennessee	18,000	1.80	53,000	2.21	*	.....	*	.....
Texas:								
Gulf Coast	40,570,000	1.56	48,280,000	1.62	2,220	28.2	2,430	30.8
Rest of state	163,300,000	1.51	213,990,000	1.86	18,130	15.9	20,970	12.8
Total Texas	203,870,000	1.52	262,270,000	1.81	20,350	17.2	23,400	14.7
Utah	*	.....	4,000	1.00	*	.....	*	.....
West Virginia	20,840,000	3.52	20,055,000	3.48	20,000	.8	19,940	.8
Wyoming	48,600,000	1.23	51,467,000	1.76	2,570	26.9	3,080	24.8
Other	.....	3.38	.....	.....	$70	.....	x30	.....
Grand total	1,022,683,000	1.43	1,284,960,000	1.68	299,100	6.2	306,100	6.5

*Included in "Other." †California State Mining Bureau. ‡Alaska and Utah. §Alaska, New Mexico, Tennessee and Utah. xAlaska, Michigan, Tennessee and Utah.

(Continued on Page 122)

ALREADY

The Wonderful Success of the

BAKER STANDARD CORE BARREL

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Fig. 1 Exterior View

Fig. 2 Sectional View Patented

On the market less than two months, The Baker Standard Core Barrel has won instant recognition. The largest cable tool operators in Wyoming, Colorado and California report unqualified success, confirmed by repeat orders, which is the real evidence that rings true.

The Baker Standard Core Barrel has made the record of getting a two-foot core in extremely hard formation at a depth of 3800 feet where a rotary core barrel failed absolutely to take an adequate core. This is due to the new principle of design, which consists of a hollow drill barrel within which a hollow core tube is reciprocally mounted so that a vertical reciprocation of the drill barrel will drive the core tube over the core without generating excessive heat. Circulation and all other operating features of coring are so perfectly achieved that the result under all conditions is clean, unaltered cores, large enough in diameter and length to show the true characteristics of formations. This Core Barrel entirely supplants the wholly incomplete and unsatisfactory Punch Barrel and Biscuit Cutter attempts toward good coring by cable tools and gives cores equal to those obtained by the best rotary core barrels. It marks a definite, original and new progress in regular cable tool drilling and is invaluable for exploration work.

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CALIFORNIA FIELDS

(Continued from Page 54)

work was undertaken immediately following completion of the discovery well.

Subsequent developments have proven this to be true and, while some operators succeeded in securing a fairly large production during the early stages, it is doubtful if more than 60 or 70 per cent have come anywhere near getting back their initial investment. Because of the small pentration afforded in both the upper and lower horizons in the extension, operators gambled on the possibility of getting quick flush production as the wells were not likely to experience more than a short life, due both to the shallowness of the sands and the overdrilled condition of the area.

There were one or two wells finished in the extension during the week but in each case the production was small and hardly warranted the expenditure necessary. The Umpire Petroleum's No. 39 Cerritos was the largest being 205 bbls. of 22.1 gravity oil from 4,765 feet. The Gallagher Trust recompleted No. 1 Cerritos after redrilling and deepening it to the deep sand at 4,775 feet but the best the well would do was 80 bbls. per day on the beam. The F. M. & S. Oil Co.'s No. 1 Cerritos is pumping 50 bbls. of fluid daily from 4,799 feet but the output was a distinct disappointment in as much as the cut is running around 70 per cent. Walter P. Temple's No. 5 Cerritos, which is being drilled as a deep test in the extension, has just passed the 5,770-foot level without picking up a third sand and the outlook at this point is rather discouraging.

The General Petroleum's No. 7 K. & H in the older section of the Long Beach Field at 4,840 feet looks like it will be a good producer when finished as it has already over 500 feet of sand from which to draw, having picked up the top of the pay at 4,300 feet. Due to the large amount of drilling going on in the extension very little attention has been paid to work in the older area and, while this section has contributed a new well from time to time, it seems to have taken a new lease on life and should yield several wells between now and the close of the year. The Union recently spudded in two new wells on its Long Beach Community lease, while the San Martinez has one driller on the Booth, Green & Dillman leases in the southwestern part of the old area. The Julian Petroleum also recently started a hole in this area, No. 1 Peacock, which was checked early this week at 2,900 feet.

Rosecrans

Probably the most important development in the Rosecrans district is the announcement of the Julian Petroleum that it intends to drill a test in the area north of the producing limits. It is hardly likely that more than one well will be drilled immediately unless the Julian Petroleum secures production or some series of markers are found. Shortly after the completion of the discovery well at Rosecrans the Sentinel drilled a test about a mile to the northwest but, due to its being located beyond the productive limits, the hole was abandoned as a duster. While being drilled, the well showed some gas and a few colors and it is believed the recent leasing in this section was undertaken because of the possibilities of this well being located on the edge of another structure north or west of Rosecrans. Several geologists believe the Rosecrans district is a minor structure and that the true field has not yet been developed. Some are inclined to believe there is a possibility of finding the major fold northeast of the present Rosecrans Field, while others are of the opinion the area west of the district warrants development.

The Julian Petroleum's surveying crew has just staked a location for No. 1 Mosher and material will probably be on ground within a few days. It is unknown whether any attempt has been made to tie up the Sentinel's No. 1 Athens, E. J. Miley's deep producer to the south and the General Petroleum's deep producer, No. 1 Amestoy with respect to another structure west of the field, but it is quite possible something along this line has been worked out. Miley's No. 6 Athens, which, by the way, is the deepest producer in the world at 7,591 feet, is producing from a deep sand which may extend in either direction, the most logical of which seems to be that it is on the edge of a deep producing horizon underlying the entire Rosecrans Field as it is defined at present. This seems to be the consensus of opinion, although there are some who believe the present Rosecrans Field is composed of two separate structures, both running northwest and southeast with a saddle between.

The Fullerton Oil Co.'s No. 1 Athens in the northeastern part of the field, which is being carried down in search of a deeper horizon, should throw considerable light on the subject if it is carried down sufficiently deep to pick up the Miley zone. If this well fails to find the deep Miley sand, the spposition that this deep horizon underlies the entire Rosecrans Field will have been proven fallacious. The Fullerton's No. 1 Athens has just passed 5,025 feet, the prevailing formation being a hard gray sand. Fred E. Cole, who recently finished a satisfactory completion in the eastern part of the district on the Wright lease, leased at one time by the Shell, has a rig up for No. 2 and drilling should get under way within a week or ten days.

Dominguez

The Shell's No. 33 Reyes, a new well at Dominguez, is the largest completion finished in that area for several months. This new producer, which was drilled to 4,048 feet and finished with a 6¼-inch oil string carrying 390 feet of 80-mesh screen, started off flowing 582 bbls. of clean 29.5 gravity oil daily. The Chanslor-Canfield Midway Oil Co. added another new producer on its Del Amo lease in the Torrance Field as a result of the completion of No. 79 which is pumping 130 bbls. of 21.1 gravity oil daily from 3,474 feet. The Standard also finished a new well in this area, No. 13 on Marble Lease No. 1 but it only showed a maximum pumping of 95 bbls. from 3,810 feet due undoubtedly to the fact that an effective water shutoff had not been secured.

The Chanslor-Canfield Midway Oil Co. finished drilling on No. 96 Olinda at Fullerton last week at 8,034 feet, the formation at that depth being a brown shale and hard sand. It is the intention of the company to make an early test and if commercial production is not secured will probably plug back to around 4,000 feet. Drilling was concluded in the Puente formation and the best that can be expected would probably be small production of comparatively light gravity oil. Some fairly good showings were encountered but it is not believed they will prove commercially productive.

S. H. Keoughan, trustee for the Continental in California, finished No. 2 Kraemer in the Richfield district doing 465 bbls. of 21.2 gravity oil daily from 4,585 feet. The completion of this well gives the Continental two producers in this field which are making approximately 700 bbls. daily. The Associated's geological staff is of the opinion there is a possibility of developing deep production on its Bayha lease in the Richfield district and the company is accordingly building a rig and bricking up the boilers for No. 1-A, which will probably get under way within two or three weeks.

Ventura

Several deep wells are nearing completion in the Ventura Avenue Field, at least one of which should come into production early next week. This well is No. 33 Lloyd of the Associated, which is rotating ahead at 6,056 feet and, judging by the indications displayed to date, should result in large production. This well, which may also establish a new record for depth as far as this field is concerned, will probably be followed by No. 8 Edison of the Shell, although No. 11 Gosnell of the same company, is also in the final drilling stage. All three principal operators in this field, the Asso-

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ciated, General Petroleum and Shell, are pursuing a rather intensive drilling campaign involving 26 wells, the depths ranging all the way from 500 feet to 6,000 feet, judging by the fact that some seven new rigs are going up, will undoubtedly maintain work at the present rate for several months.

The field's present daily production is averaging approximately 47,000 bbls., but it is expected this figure will register a substantial increase when some of the wells now drilling come into production, possibly within 60 to 90 days. In view of the fact that neither the Associated, General Petroleum nor Shell are involved in any extensive drilling operations at any other point, it is quite probable these three companies will continue running 8 or 10 strings of tools each, in which event the field production may be expected to approach the 60,000-bbl. mark around the end of the year or may be a little later. The future production of this field is dependent of course upon the action of these concerns and it is quite possible the daily field production will exceed 60,000 bbls., as none of them has shown any inclination to cut down drilling.

No. 1 Willett of the Petroleum Securities in the southern part of the Ventura Avenue Field is scheduled to pick up the pay within a few weeks and, although the well has not made any impressive showing down to 5,300 feet, it should improve with the addition of a little more hole. The Bosa Chica has just passed the 2,600-foot level in No. 2 Hartman, its second well in this field but, as extreme care is being exercised, it will probably be 60 days before it will be in a position for a test. It is understood the company intends to carry this second hole somewhat deeper than the first, as it is thought much better production will be secured. G. J. Magenheimer had the misfortune to run into a rather difficult fishing job at 3,737 feet and it would not be surprising if the rig was skidded to a new location.

Temescal Producer

The Temescal Petroleum has just finished No. 3 on E. L. Doheny's 10,000-acre ranch at Piru in Ventura County and, while it is not on permanent production, it is capable of doing 150 bbls. daily from 2,204 feet. The Temescal Petroleum, which is a Doheny concern, has not yet drilled a deep test on this acreage but may do so in the near future. If the company succeeds in developing a deep and highly productive horizon, it is quite possible the Marland, Standard, Shell and Bolsa Chica may profit by the discovery, as these concerns own some offset acreage. The Union is cleaning up the debris resulting from the fire of No. 1 Caldwell Snyder on South Mountain, which occurred while the well was being drilled ahead at 3,833 feet, and will probably have finished reconstructing the rig before the close of another week. The company in the meantime is hauling in material for No. 2 and setting boilers for early work.

Midway-Sunset

There were but a few wells actually put on production in the Midway-Sunset area although several more were finished and are scheduled for completion within a few days. The Union's No. 4 Buena Vista in Section 32-32-24 is recorded as a 200-bbl. pumper from 3,960 feet, the oil testing 25.1 degrees and showing a cut of 2 per cent. The Balboa's No. 52 in Section 24-31-23, is a 298-bbl. pumper from 4,170 feet.

The Beverly's No. 9 in Section 6-11-23 is showing up unusually well at 2,054 feet and the outlook is very encouraging for fairly large but shallow production. No. 8 in the same section at 2,154 feet is also showing up favorably. The Midway Northern is running the oil string in its No. 15 in Section 32-12-23 and it is expected the well will go on production from the 3,500-foot level. The Obispo Oil Co. is experiencing considerable difficulty with water in its No. 11, Section 32-12-23, but the well, nevertheless, will be put on a probationary production test.

Developments are progressing quite favorably in the Poso Creek area and, although the Shell's No. 1 Vedder is still the only producer in that district, it is believed the Union's No. 1 Sarrett and possibly another may be in a position to make a bid for production within two weeks. George F. Getty finished a very satisfactory pumper in the completion of No. 4 Tegeler on the Kern front in Section 22-28-27. This well registered an initial output of 131 bbls. from 2,460 feet, the hole being finished with a 6⅝-inch oil string. The Union is making preparations to finish No. 16 Federal in the Elk Hills Field and will undoubtedly spud in No. 17 immediately upon its completion, as the latter is being rigged up for work.

Southern California Wildcats

The most interesting development among the wildcatters during the past week was the staking of a location for No. 1 De Baker by the Petroleum Securities in the Bandini district, which has been the scene of considerable work during the past several years. Something like six or eight wildcats have already been drilled in this area without securing production but, notwithstanding the Petroleum Securities is making preparations to initiate an early spud. The Bandini area has allured numerous operators to drill or secure protective holdings, among whom were the Superior, Bandini, Wilshire, Standard, Shell, California Petroleum, Associated and Fullerton Oil Companies. There are no surface indications exposed in this particular district but it is generally agreed a field should exist in this vicinity as the Santa Fe Springs structure is directly in line and there should be another uplift at this point.

Another interesting wildcat located during the week was that of the Dominguez Extension Oil Co., which is rigging up for work in Section 27-3-13. This test lies between the Rosecrans and Dominguez Fields, being situated about 3 miles southeast of the Rosecrans Field and about a mile northeast of Dominguez. Some doubt the existence of another structure in this area but the test will prove an interesting one. The Marine's No. 1 Strong at Bellflower has taken on a doubtful aspect, as no favorable indications have been noted from the grass roots down to 4,139 feet.

Field scouts are bringing in rumors that the Shell is contemplating the drilling of another wildcat in the Garden Grove area and this seems rather consistent in view of the fact that this company is reported to have done some work in this area with a torsion balance. Although two dusters were chalked up against this territory last year or so it certainly warrants a more conclusive test. No. 1 Cypress of the Associated in the Inglewood area is still dry at 3,200 feet but cannot yet be classified as a duster, although shallow production was originally anticipated.

Northern California Wildcats

Woodward & Sheedy have just finished rigging up their projected test at Famosa in Kern County and spud is scheduled early next week. A. G. Schwartz has abandoned his wildcat at Rosedale, which looked rather promising for a time and, while another shallow test is contemplated, it is doubtful whether any further work will be undertaken for the present. The Bolsa Chica's wildcat in the Kettleman Hills area, Section 30-23-9, is drilling ahead in a sandy shale at 2,300 feet, the log showing several streaks of oil sand in the last 75 feet. No. 1 Berlywood of the Shell at Moorpark is still in the conglomerate at 5,665 feet but, notwithstanding this hard formation, fairly good footage is being made. The Chanslor-Canfield Midway Oil Co. may not be out for another drilling record with its No. 1 Hobson, a wildcat in Ventura County, but at 5,835 feet it looks as though the company will be obliged to drill at least 6,500 feet of hole before production can be anticipated. The Milham's No. 1 Sexton east of the Ventura Avenue Field is still standing cemented at 6,017 feet but should be drilled out within a few days. Neither the Pan American nor Pyramid reports any change for the better in their re-

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spective wildcats in Monterey County, the former's test being down 2,277 feet, while the bit in the latter's wildcat is being pushed ahead at 2,750 feet.

SPINDLETOP INCREASES; DEEP SAND OUTPUT 103,000

(Continued from Page 53)

1 Schabauer to around 3,620 feet and shut it down, as did the New Beaumont Oil Co.'s No. 1 Garrick, north of production, at 2,600 feet.

At the close of the week the production in the deep sands was 103,155 bbls., divided as follows:

Company—	Bbls.
Yount Lee Oil	46,715
Gulf Production	38,275
Rio Bravo Oil	13,100
Atlantic Oil Producing	1,340
Sun Company	575
Turnbow Oil	150
Paggi & Co.	400
Unity Oil	2,600
Total	103,155
*Total last week	77,750
Increase	25,405

*A late estimate last week showed 104,400 bbls.

Other sources will credit the pool with from 92,000 to 94,000 bbls., but they do not include the late completions which bring up the daily average.

Credit Balance Prices

Three sets of prices are maintained by the pipe lines for Gulf Coast crudes. These are "A" grade, "B" grade and light gravity. "A" grade is defined as having a viscosity of not less than 100 seconds at 100 degrees Fahrenheit, Saybolt not over 4 per cent sulphur content, gravity, 25 degrees at 60 degrees Fahrenheit. The cold test of distillates having viscosity of 1,000 seconds at 100 degrees Fahrenheit shall not be over 5 degrees Fahrenheit, A. S., T. M. method.

"B" grade is defined as all crudes which do not meet the specifications for Grade "A." Light gravities are classified separately from grades A and B.

The following are the Spindletop prices, effective August 31 by the various pipe lines:

Grade "A" by the Gulf, Texas, Sun, Humble, Magnolia Cos.	$1.25
Grade "B," by the Gulf and Magnolia only	1.15
Gravity basis by the Gulf, Magnolia, Texas, Humble, Sun Cos.	
*Below 25 gravity	1.25
25 to 25.9	1.30
26 to 26.9	1.35
27 to 27.9	1.40
28 to 28.9	1.45
29 to 29.9	1.50
30 to 30.9	1.55
31 and up	1.60

The Texas Company does not post prices on this grade.

In the other Coastal Pools the posted price on "A" grade is $1.40.

Wells Drilling

The Gulf Production Co. is setting casing in No. 4 Oakwood at 3,450 feet. Locations have been made for Nos. 5 and 6. Casing has been set in No. 4 Weed at 3,750 feet with locations for Nos. 6 and 7. No. 5 is drilling around 3,250 feet. No. 2 Jack-Duff is at 2,345 feet with locations for Nos. 3, 4, 5 and 6. The Atlantic Oil Producing Co.'s No. 5 McLean is drilling at 3,267 feet and No. 6 is below 3,300 feet, with No. 7 at 2,780 feet and No. 8 at 1,455 feet. Derricks are going up for Nos. 9 and 10. The Rio Bravo Oil Co. has three rigs going on its right of way lease from the T. & N. O. Ry. (Southern Pacific). The Sun Oil Co. is drilling three on the McLean.

Paggi & Co.'s No. 2 Gordon is deepening. Wise and Ward No. 1 McFaddin is at 2,265 feet. The Walker Oil Co.'s No. 1 Quinn is around 2,100 feet with a location for No. 2. The Deep Sand Oil Co.'s No. 1 Howell is at 3,190 feet. W. B. Flynn's No. 1 Gladys is a location. Hines' No. 1 Ewing is below 2,700 feet. The Grayburg Oil Co.'s No. 1 McLean on the west side is at 2,900 feet. The Turnbow Oil Co.'s No. 1 Weed is drilling around 3,800 feet with a location for No. 2 Banks. Rush and Pittman's No. 1 Hammon is at 2,535 feet. Spindletop Gusher Oil Co.'s No. 1 Rish is drilling at 3,254 feet. The Unity Oil Co has a derrick up for No. 90 McFaddin. Sun Oil Co.'s No. 1 Price is around 865 feet.

There are now 47 producers in the west side deep sand area, an increase of 7 since the previous review. The estimated gross production for August will exceed 1,900,000 bbls., or nearly 1,125,000 bbls. more than during July.

Much of the crude is being shipped direct to Marcus Hook (Philadelphia) refineries and also to the New Jersey coast plants.

ARTESIA, NEW MEXICO

(Continued from Page 50)

for a well in Section 7, Block A-57, Winkler County.

Eddy County

Compton's No. 2 Mann permit Section 3-18-27, shut down at 2,060 feet; Cook-Ironside No. 1 Section 10-20 29, drilling at 2,050 feet; Decum Development Co.'s No. 1 Vandagriff permit, Section 5-17-28, shut off water, will shoot bottom of hole 2,458 feet; Flynn-Welch & Yates' No. 51, Section 28 18-28, drilling below 1,900 feet; Rehn and others' No. 1 Winans, Section 15-18-26, drilling below 1,860 feet; Hamilton Petroleum Co.'s No. 1 Billings, Section 12-19-26, drilling below 1,200 feet; Hasenfuss & Donley's No. 1 Keyes, Section 13-18-28, drilling at 2,600 feet; Henderson-Dexter-Blair No. 1 Section 9-19 28, drilling at 2,000 feet; Levers-Carper No. 4, Section 3-18-28, drilling at 500 feet; Navajo Oil Co.'s No. 2, Section 28-17-28, ready to spud; Ohio Oil Co.'s No. 7 Toomie-Allen, Section 28-18-28, drilling 500 feet; Phillips & Welch's No. 1, Section 35 17-28, drilling at 2,500 feet; Swartz-Compton-Eaton's No. 1 Brainard permit, Section 5 18-27, shut down 2,002 feet; Sun Oil Co.'s No. 1, Section 21-25-30, drilling 1,400 feet; Skelly Oil Co.'s No. 1 Lynch permit, Section 22-17-31 set 8¼-inch casing at 2,665 feet, drilling at 3,350 feet; Snowden-McSweeney's No. 2, Section 33-18-28, on production from deep sand; Bruce Sullivan No. 1, Section 1-18 31, drilling below 1,600 feet; Merriweather and others' No. 1 Goodale permit, Section 19-18-29, shut down at 2,375 feet; Wooley-Jones' No. 1 Beeson, Section 33-17-30, resumed drilling at 3,076 feet; Pueblo Oil Co.'s No. 1, Section 33-17-28, drilling 1,250 feet.

Lea County

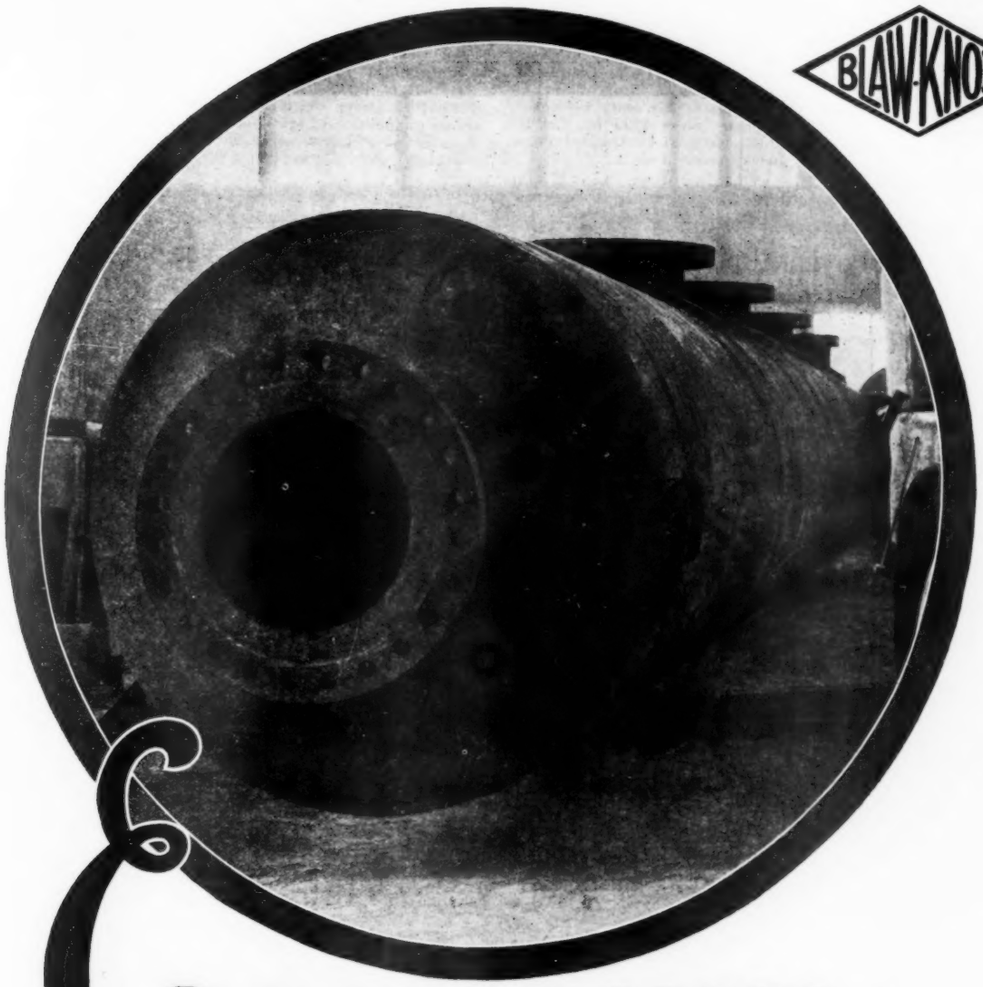
Cap Rock Oil & Gas Corp.'s No. 1, Section 11-16 32, shut down; Covert No. 1, Section 15-21-33, drilling below 1,650 feet; Henderson-Dexter-Blair's No. 1 Wyatt, Section 34-17-33, rigging up; Ingelfield and others' No. 1, Section 4-17-34, drilling below 1,300 feet; Maljamar Oil & Gas Corp.'s No. 1, Section 16-17-32, moving rig to location; Maljamar's No. 1 Baish permit, Section 21-17-32, being put on pump; Maljamar's No. 1 Grace Mitchell permit, Section 5-17-32, drilling at 200 feet after plugging crooked hole; Mescalero Petroleum Co.'s No. 1 Jennie Hughes Section 27-19-38, drilling 700 feet; T. P. McDonald No. 1, Section 22 18 34, shut down; Ohio Oil Co.'s No. 1 William Mitchell permit, Section 18-17-32, drilling 300 feet.

STRIKE GAS POCKET IN KANE DEEP TEST

OIL CITY, Pa., Sept. 4.—A pocket of gas was struck in the deep test of the United Natural Gas Co. No. 3737, near Kane. The depth of the hole at the time the gas was struck was 5,120 feet. The gas had sufficient pressure to blow the tools part way up the hole and to kink the line a little. In 10 minutes the gas was entirely gone and the drilling was resumed the following day.

The other deep test being drilled in northwestern Pennsylvania, that of the Fidelity Petroleum Corp., near Tidioute, is now at 4,500 feet. Salt water was struck in the Oriskany sand and the hole is full of water now. The company has run in 4,287 feet of 8¼-inch casing and will put the remaining 200 feet of casing in the first of the week.

BLAW-KNOX



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L. G. GURWITSCH DEAD; NOTED OIL AUTHORITY

By Jerome Valentine

The petroleum world has lost one of its outstanding chemists and oil investigators, Prof. Leo Gavrilovich Gurwitsch. He died in Moscow, Russia, on May 30, from cancer in the stomach.

L. G. Gurwitsch was born in Poltava, Russia, in 1871. Upon graduation from Kiev University (in organic chemistry), he continued to study in the University of Basel, Switzerland, where in 1899 he received his degree of Ph.D. L. G. Gurwitsch remained in western Europe and worked in the laboratories in Berlin, Vienna, Munchausen and Elsas to 1904, when he was put in charge of Nobel Brothers Petroleum Co.'s laboratories (Petrograd, Russia.) From that time up to the time of his death he worked in petroleum. Since 1920 he was the head of the National Centralyzed Petroleum Laboratories in Baku.

His well-known book, Die Wissenschaftliche Grundlagen der Erdol Verarbeitung (first edition, Berlin, 1913; second edition, Berlin, 1924, and third, Moscow, 1925, in Russian) is translated into French and English, and is regarded as the best on the subject. As an authority on petroleum he has been recognized all over the world.

He left more than 30 published scientific papers, among which the best known are on composition of petroleum, on clarifying action of fullers earth, on distillation of petroleum, absorption theory and others.

L. G. Gurwitsch will be greatly missed not only by the scientific world, but by the whole petroleum fraternity.

He is survived by his wife, daughter and son, Benjamin, who worked under his father's guidance and is a noted chemist in Russia.

FIRST COAHUILA WILDCAT

Drilling has been started on the first wildcat oil well in the State of Coahuila, Mexico. This test is 40 miles west of Cuatro, Cienegas, and is on property of the Mid-Kansas Gas & Fuel Co.

GOVERNMENT'S CRUDE AND REFINED OIL STATISTICS FOR 1925

(Continued from Page 115)

COMPARATIVE ANALYSIS, 1925
(Units in thousands of barrels except for wax)

	January	February	March	April	May	June	July	August	September	October	November	December	1925	1924
GASOLINE:														
Production	20,943	19,182	20,631	20,752	21,996	22,488	23,073	23,191	21,573	22,488	21,946	22,238	259,601	213,326
*Imports	344	287	346	244	404	384	401	314	182	214	373	320	3,813	3,453
*Exports	2,255	2,456	2,947	2,600	2,362	2,706	2,504	2,953	2,242	2,538	2,842	3,092	31,497	28,967
Stocks	34,563	38,372	41,512	40,895	40,474	39,916	38,007	36,236	35,572	35,910	37,363	38,875	38,875	39,823
Domestic demand	14,386	13,210	14,890	19,013	20,453	20,724	22,879	22,323	20,177	19,826	18,024	17,954	223,865	185,003
KEROSENE:														
Production	5,897	5,101	5,228	4,774	4,810	4,600	4,592	4,465	4,710	5,121	5,064	5,327	59,689	60,026
*Imports	2	2	1	2	1	2	2	1	1	2	2	1	19	10
*Exports	1,760	1,318	1,949	1,916	1,351	1,659	1,723	1,944	1,621	2,093	2,046	1,832	21,212	21,961
Stocks	9,368	10,337	10,831	10,316	10,747	11,216	10,581	9,575	8,405	7,989	7,498	7,121	7,121	8,594
Domestic demand	3,367	2,814	2,786	3,375	3,029	2,474	3,506	3,528	4,260	3,446	3,513	3,871	39,969	36,712
LUBRICANTS:														
Production	2,467	2,401	2,831	2,559	2,609	2,500	2,499	2,675	2,565	2,608	2,630	2,711	31,055	27,498
*Imports	1	.....	2	6	11	6	3	4	1	1	1	1	37	11
*Exports	947	641	897	915	917	746	786	872	547	757	708	947	9,678	9,103
Stocks	6,678	6,818	7,136	6,906	6,955	6,633	6,852	6,728	6,760	6,827	6,999	7,253	7,253	6,420
Domestic demand	1,263	1,620	1,618	1,880	1,654	2,082	1,497	1,931	1,987	1,785	1,753	1,511	20,581	18,124
WAX (thousands of pounds):														
Production	54,310	47,812	53,642	48,867	50,269	43,348	46,032	47,456	46,713	50,182	49,087	52,859	590,577	516,491
*Imports	1,030	1,349	425	448	3,779	1,412	1,922	1,338	219	734	1,125	807	14,588	12,867
*Exports	31,929	25,601	29,012	24,627	22,254	22,677	26,594	25,717	29,256	33,049	31,107	32,356	334,179	382,820
Stocks	89,008	89,328	95,077	103,310	109,822	110,284	112,942	117,080	108,679	113,649	111,231	116,391	116,391	88,796
Domestic demand	24,111	23,240	19,304	16,465	25,282	21,521	18,802	18,933	26,083	12,897	21,523	16,150	244,301	221,590
GAS AND FUEL OILS:														
Production	28,000	25,355	28,825	29,453	30,441	32,519	34,495	33,502	30,579	31,559	29,306	30,957	364,991	320,476
*Imports	1,054	1,418	1,317	1,124	1,090	1,648	1,287	968	652	731	539	417	12,245	12,927
*Exports	2,455	2,606	3,158	2,863	3,600	3,419	3,136	2,523	2,830	2,896	3,026	3,567	36,079	37,249
†Stocks	18,425	18,949	19,089	20,493	22,542	25,763	27,821	29,863	29,915	28,948	27,266	24,681	24,681	19,566
§Domestic demand	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*From Bureau of Foreign and Domestic Commerce; exports (except for wax) include shipments to Alaska, Hawaii and Porto Rico. †East of California. §Not available.

PRODUCTION AND STOCKS OF THE REFINERIES IN THE UNITED STATES, 1925
(Figures in units of a thousand, all in barrels of 42 U. S. gallons except wax, coke and asphalt)

Runs and output—	Crude Oils— Domestic	Crude Oils— Foreign	Unfin'd. oils(net)	Nat. gas gasoline	Gasoline	Kerosene	Gas and fuel oils	Lubricants	Wax (lbs.)	Coke (tons)	Asphalt (tons)	Other finished products	Unfin. oils produced (net)	Losses
East Coast	104,725	23,766	6,814	3,191	41,527	13,665	58,925	9,189	230,902	200.3	1,197.1	1,180	....	5,343
Appalachian	25,118	.....	640	362	10,154	3,407	5,761	1,511	82,181	16.3	.2	338	....	1,552
Indiana, Illinois, etc.	67,159	.....	1,624	1,033	34,800	6,131	18,510	3,207	81,213	239.1	196.3	1,954	....	2,391
Oklahoma, Kansas, etc.	97,612	.....	1,552	2,767	47,978	9,090	37,128	2,518	48,970	94.0	.8	589	....	3,865
Texas (total)	136,705	7,577	1,020	4,175	53,130	13,360	66,033	7,716	60,548	232.9	366.0	234	....	5,716
Texas Gulf Coast	100,748	7,577	2,286	3,796	39,694	10,982	48,610	7,203	56,215	211.3	365.1	79	....	4,702
Louisiana-Arkansas (total)	57,002	9,995	.....	586	14,996	5,461	37,358	793	41,513	119.5	395.9	1,899	2,987	1,061
Louisiana Gulf Coast	40,763	9,995	.....	.....	11,877	4,789	26,053	734	41,513	113.2	386.4	1,484	2,240	645
Rocky Mountain	26,164	.....	3,333	835	14,563	2,207	11,208	587	45,034	88.3	33.4	28	....	797
California	184,097	.....	....	*6,687	42,453	6,368	130,068	2,534	216	.....	487.7	1,622	2,775	2,189
Total	698,582	41,338	9,221	19,636	259,601	59,689	364,991	31,055	590,577	991.0	2,677.4	8,044	..	22,914
January	54,271	3,209	1,083	1,508	20,043	5,897	28,000	2,467	54,310	76.2	162.0	507	....	1,629
February	49,903	3,218	685	1,446	19,182	5,101	25,355	2,401	47,812	75.5	119.1	431	....	1,482
March	55,414	4,138	253	1,555	20,631	5,228	28,825	2,831	53,642	79.3	174.4	621	....	1,650
April	54,674	4,636	706	1,568	20,752	4,774	29,453	2,559	48,867	81.4	209.0	618	....	1,654
May	58,166	4,213	731	1,754	21,996	4,810	30,441	2,609	50,269	87.7	264.7	855	....	2,036
June	60,927	3,986	583	1,621	22,488	4,600	32,519	2,500	43,348	86.7	265.9	762	....	2,143
July	64,982	2,593	493	1,545	22,073	4,592	34,495	2,499	46,032	88.9	273.1	740	....	2,040
August	64,273	2,743	684	1,579	23,191	4,465	33,502	2,675	47,456	88.3	286.2	964	..	2,217
September	59,222	2,893	761	1,606	21,573	4,710	30,579	2,565	46,713	84.2	264.6	802	....	2,161
October	60,702	3,268	961	1,667	22,488	5,121	31,559	2,608	50,182	86.8	284.4	596	....	1,998
November	56,775	3,535	1,119	1,903	21,946	5,064	29,306	2,630	49,087	82.3	218.4	663	....	1,876
December	59,273	2,906	1,162	1,884	22,238	5,327	30,957	2,711	52,859	73.7	155.6	485	....	2,028
Stocks end of Month:	†			§			†							
January	28,180	4,186	34,507	.....	34,569	9,366	18,425	6,678	89,006	111.4	121.6	921	..	....
February	27,980	4,966	34,171	.....	38,372	10,337	19,949	6,818	89,326	125.2	123.2	935	....	....
March	27,499	5,114	35,572	.....	41,512	10,831	19,089	7,136	95,077	133.9	134.3	969	....	....
April	28,201	4,254	36,518	.....	40,895	10,316	20,493	6,906	103,310	145.2	136.7	1,080	..	....
May	28,100	4,315	37,405	.....	40,474	10,747	22,542	6,955	109,822	165.9	151.6	1,161	....	....
June	29,708	4,174	39,024	.....	39,916	11,216	25,763	6,633	110,384	191.6	141.7	1,115	....	....
July	30,014	4,293	39,504	.....	38,007	10,581	27,821	6,852	112,942	214.0	160.5	1,042	....	....
August	26,411	4,304	40,447	.....	36,236	9,575	29,863	6,728	117,086	222.5	161.0	1,207	....	....
September	26,780	3,880	40,412	.....	35,572	8,405	29,915	6,760	108,679	250.3	143.4	1,097	....	....
October	24,038	3,995	39,797	.....	35,910	7,989	28,948	6,827	113,649	247.4	152.4	954	....	....
November	22,925	4,219	38,729	.....	37,363	7,496	27,266	6,999	111,231	248.1	162.3	896	....	....
December	22,969	4,188	38,922	.....	38,875	7,121	24,681	7,253	116,391	238.4	159.4	1,008	....	....

*Includes 2,566,000 bbls. turned into pipelines formerly classed as crude run. †East of California. §Included with stocks of unfinished oils.

WORLD'S PRODUCTION OF PETROLEUM IN 1924 AND 1925*

Country—	1925 Barrels of 42 U. S. Gallons	1925 Metric Tons	1925 Cubic Meters	1925 Percentage to total by Volume	1924 Barrels of 42 U. S. Gallons	1924 Metric Tons	1924 Cubic Meters	1924 Percentage of total by Volume
United States	763,743,000	104,622,000	121,422,000	71.5	713,940,000	98,024,000	113,504,000	70.4
Mexico	115,515,000	17,626,000	18,365,000	10.8	139,678,000	21,367,000	22,206,000	13.8
Russia	52,448,000	7,295,000	8,338,000	4.9	45,355,000	6,301,000	7,211,000	4.5
Persia	35,038,000	4,652,000	5,571,000	3.3	32,373,000	4,313,000	5,147,000	3.2
Dutch East Indies	21,422,000	3,066,000	3,406,000	2.0	20,473,000	2,926,000	3,255,000	2.0
Venezuela	19,687,000	2,884,000	3,130,000	1.8	9,042,000	1,335,000	1,438,000	.9
Rumania	16,646,000	2,317,000	2,646,000	1.6	13,369,000	1,860,000	2,125,000	1.3
Peru	9,164,000	1,207,000	1,457,000	.9	7,812,000	1,029,000	1,242,000	.8
India	8,000,000	1,100,000	1,300,000	.8	8,416,000	1,182,000	1,338,000	.8
Poland	5,960,000	812,000	948,000	.6	5,657,000	771,000	899,000	.6
Argentina	5,818,000	846,000	925,000	.5	4,669,000	679,000	742,000	.4
Trinidad	4,654,000	648,000	740,000	.4	4,057,000	564,000	645,000	.4
British Borneo (Sarawak)	4,257,000	613,000	678,000	.4	4,162,000	599,000	662,000	.4
Japan and Taiwan	2,000,000	285,000	306,000	.2	1,814,000	252,000	288,000	.2
Egypt	1,226,000	179,000	195,000	.1	1,122,000	163,000	178,000	.1
Colombia	581,000	83,000	92,000		445,000	64,000	71,000	
France	459,000	66,800	73,000		426,000	61,000	68,000	
Germany	411,000	60,000	65,000		406,000	59,000	65,000	
Canada	318,000	41,000	51,000		161,000	22,000	26,000	
Czechoslovakia	50,000	7,000	8,000		76,000	11,000	12,000	
Italy	45,000	5,000	7,000	.2	45,000	5,000	7,000	.2
Algeria	12,000				11,000			
Barbados	9,000				10,000			
Cuba	4,000	18,000	20,000		4,000	18,000	20,000	
England	2,000				2,000			
Other countries	97,000				97,000			
Total	1,067,586,000	148,427,000	169,737,000	100.0	1,013,623,000	141,605,000	161,149,000	100.0

*Compiled by J. M. Jones.

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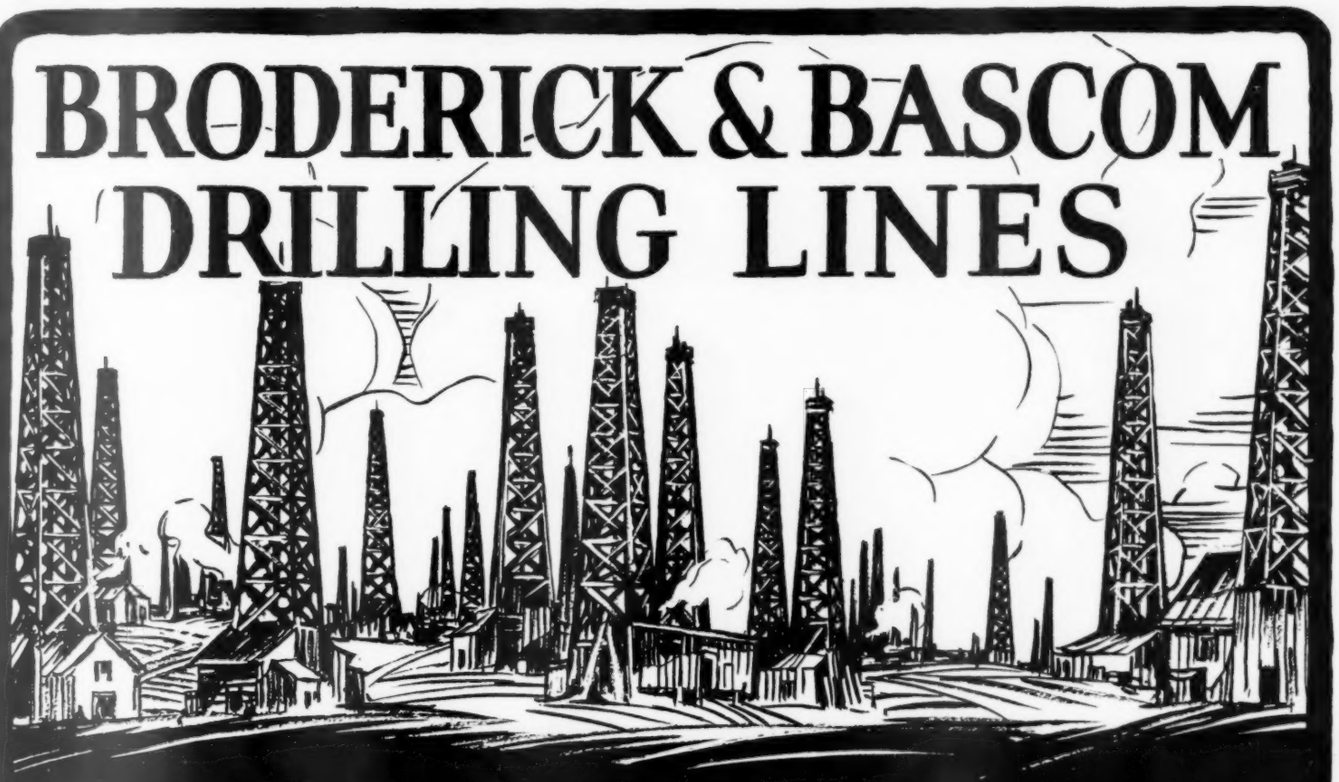

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KENTUCKY-TENNESSEE

(Continued from Page 60)

Knoxville, Tenn., which has been talking natural gas for fuel for the past year or so.

In the western division, Grayson County is once more in the limelight. Several years ago some oil was developed near Leitchville, but never caused much excitement and died out within a short time only to revive at this time with three drilling wells reported under way. Walter and Sam Chenault, well-known Kentucky operators, are drilling a test on the George Kenser farm, 1½ miles south of Leitchfield. A deep test about 2 miles from the drilling well of the Chenault people is being made by Robinson and others on the Carville farm, and the same firm is drilling a test 6 miles south of Leitchfield, on the Jones farm. These three tests should give the county a fairly good testing. Geologists are making very favorable reports on Grayson County territory, but the drill alone will determine the value of the structures throughout the county.

Week's Work Summarized

A summary of the week's work in the Kentucky Field shows 34 completions, 25 producers with an initial production of 225 bbls., 8 dry holes and 1 gas well. Compared with the previous week, there were 2 more completions, 2 less producers, 592 bbls. less production, 3 more dry holes and 1 more gas well. These wells were distributed by counties and districts as follows:

County—	Comp.	Oil Wells	Pro.	Dry	Gas
Barren	16	15	139	1	0
Estill	5	3	32	2	0
Johnson-Magoffin	4	3	52	1	0
Owensboro dist.	2	2	23	0	0
Allen	2	0	0	2	0
Warren	1	1	5	0	0
Wayne	2	0	0	2	0
Elliott	1	1	3	0	0
Floyd-Knott	1	0	0	0	1
Total	34	25	255	8	1
Last week	32	27	847	5	0
Difference	2	2	592	3	1

Eastern Division

The two best completions in the eastern division of Kentucky was near Ivyton, in District 31, of Magoffin County, made by Hupp, Duff & Chiles in Nos. 2 and 3 on the B. F. Whitt farm, 2 miles ahead of production showing an initial production of 25 and 20 bbls., which means the opening of quite an extension toward the Magoffin-Floyd County line. In the same district, Oliver Jenkins drilled a dry hole in a test on the Boyd Bailey farm. In District 29 of Johnson-Magoffin Counties, Hudson & Collins drilled an 8-bbl. producer in the Weir sand at No. 12 on the Oscar Wheeler farm.

In Estill County, the Superior Oil Corp.'s Nos. 18 and 19 Simp Horn farm, in District 8, produced 10 and 12 bbls., respectively. The Reno Oil Co.'s No. 8 on the S. M. Maple tract, produced 10 bbls. initial. Two dry holes were drilled in District 7, same county, by the Mountain Springs Oil Co.'s No. 3 Malissa Rogers farm and C. B. Howell, trustee, in No. 4 C. B. Howell farm.

In District 3 of Wayne County, Bell & Back drilled a duster in No. 13 on the Alfred Cooper farm, while in District 13, Bert F. Edwards and others struck one of the same kind in a second test on the Mrs. James Catron farm.

In District 34 of Elliott County, the Edra Lee Oil & Gas Co. drilled in a 3-bbl. well in a third attempt on the I. M. Ison farm.

The Distill-Martin Oil & Gas Co. brought in a nice gas well in a test on the John Ambury farm, in District 21, of Floyd-Knott Counties, extending the gas producing area of the county some distance.

The recent completion of a 1,500,000-foot gas well by the Hatcher Coal Co. on the Col. James Hatcher property, 5 miles from Pikeville, and directly east of the Beaver Creek Field of Floyd County, may mean an extension to the east of the gas producing area of Floyd County. The well has caused quite a stir among gas people and means much for the future supply for the Kentucky gas lines that run from the eastern part of the state as far west as Frankfort and Louisville.

Western Division

Outside of the Glasgow Field of Barren County but few completions were reported for the past several days, even the Owensboro district failing to make a showing worth while. Considerable advance work is in progress to the Owensboro area since the entrance to the field of the Ohio Oil Co., Petroleum Exploration Co. and a few other large operating concerns. Only two real completions are reported from the Owensboro Field of Hancock-Ohio-Daviess Counties. One is the Wood Oil Co.'s No. 1 on the J. U. Bartley farm of 140 acres which is on the Daviess County side, with a reported production of 15 bbls., and the Vicion Oil Co.'s No. 5 O. T. Burdette farm, with 8 bbls. initial from the Barlow sand. No. 5 well of C. A. Leeper on the H. D. Brown 205 acres proved dry in the Jett sand and may be drilled for the lower Barlow sand. C. E. Daugherty and others' No. 13 on the Lucinda E. Crowe 153 acres, is a much better producer than reported, showing 40 bbls. initial instead of 25 bbls. from the Barlow sand. The Butte Dredging Co. is drilling No. 3 on the Allie Evans farm, where its second well proved a duster. Boyles, Powers and others are reported around 850 feet at a test in the Red Hill School House area, which is purely wildcat territory. The Penn-Indiana Oil Syndicate is starting No. 7 on the R. B. Powers 100 acres, and 400 feet east from No. 5, same farm, and an offset to No. 3 on the Powers 86 acres. Same company is drilling No. 10 on the Laura Mercer 84-acre farm, as well as No. 4 on the C. A. Kelly 260 acres. The Ohio Oil Co. is drilling a test a quarter of a mile east of Pleasant Ridge on the Daby farm, and awaiting a string of tools to start its test on the Lonzo Crowe 50 acres, which will be an offset to its No. 1 on the Ellis & Heplin farm. The Rex-Pyramid Oil Co. is in the sand at its No. 1 Ambrose farm, offsetting the Ohio Oil Co.'s well on another of the Ambrose farms. Ellis & Courson are nearing the sand at a test on the A. Martin 50 acres. Petroleum Exploration Co. is starting a well on the Howard 130 acres. The Penn-Indiana Oil Syndicate is starting a second well on the Simpson heirs 126 acres, while the Chicago Petroleum Syndicate is drilling a second test on the Nannie Brown 30 acres.

Barren County

Development work on a large scale is being maintained in the Glasgow Field of Barren County, where numerous producing pools have been found from time to time. Some of the pools are large while others are very small, there appearing to be no connection to speak of from one pool to another.

In the Emery-Moore Pool, Fred C. Moore is reported to have a 5-bbl. producer in No. 11 on the Howard farm. Houchins Leasehold Co.'s No. 16 Mayfield, is reported at 8 bbls. Seams and others' No. 3 W. E. Steffey farm is estimated at 8 bbls. while the Ruby Oil & Gas Co.'s No. 7 W. E. Steffy is estimated at 7 bbls. Phil Kopel is reported to have a showing for 5 bbls. at his No. 3 on the Wilson lease.

In the Hall Baker Pool, the Consolidated Gas Co.'s No. 10 Hall Baker farm is estimated around 8 bbls.

In the Knob Road Field, the Star Oil & Gas Co.'s Nos. 8, 9 and 10 on the Richardson lease are reported at 10, 8 and 12 bbls. initial, respectively, while Ziegler Brothers' second well on the Darter Brothers lease is reported around 40 bbls. initial and the best completion for the past week in the Barren County area.

In the Gorby Pool, Lew J. Emery, Jr., Sons' Nos. 6 and 7 Jim Jones lease, are said to show an initial production of 5 and 7 bbls. This well-known company is reported to have shut down development work in the Glasgow Field for a period. The Houchins Leasehold Syndicate's second well on the M. S. Chamberlain lease is estimated at 5 bbls. Hiland Oil & Gas Co.'s No. 18 Casaday lease looks good for 6 bbls., while J. J. Sayre's No. 4 Hatfield is reported at 5 bbls. Unknown

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parties are said to have completed a dry hole on the Whitney lease.

Other Completions

H. B. Bradsers drilled in a dry hole in No. 9 on the Dink Britt farm at 384 feet. This is in the Scottville Field of Allen County. M. L. Herpalshimer struck one of the same kind at a test on the L. S. Barlow farm at 380 feet.

In the Bowling Green Field of Warren County, the New Domain Oil & Gas Co.'s No. 5 on the Bessie Snell & Co. lease is good for 5 bbls. at 1,181 feet.

MICHIGAN FIELDS

(Continued from Page 58)

around 20 bbls. initial. This makes the fifth completion in the field for this company, one being dry on the Boldebuck farm, one producer on the Engle farm and three on the Ulrich farm. Rig is up for No. 4 on the Ulrich farm, and No. 5 will soon be started. This lease is along the Hermansau Road, midway between the Saginaw corporation limits and the Shattuck Road and the two new completions are on the north side of the Pere Marquette Railroad.

The Sun Oil Co. is starting the erection of a 2,500-bbl. storage tank which it is installing to handle its production in the local field and that of other companies from which it is buying oil. The tank has arrived and the grading for its foundation has been done. It will be located on the Pere Marquette belt line tracks near Weiss Street. The Sun Oil Co. already has gathering lines to care for the production of the field.

The Sun Oil Co., according to schedule, will within the next few days have six strings of tools working in the field, being Nos. 3 and 4, on the John Schoenteit; No. 1 Ferdinand Steltzriede, Dr. E. Bradshaw, C. J. Rabs and William Scherzer, all in Section 11, Saginaw Township.

The next well due for completion is that of Myron E. Lee on the J. Conrad Brechtelsbauer farm, along the Shattuck-Hermansau Roads, and near Weiss Street. Drilling has been resumed on the Valley Oil & Gas Co.'s well on the Charles Priess property near Michigan Avenue and Madison Street.

New Leases

The Ohio Oil Co. filed leases on 105 acres; one of 65 acres in Bridgeport Township and another of 40 acres in Kochville Township, Saginaw County.

George A. Sinclair, Harry W. Louden and H. J. Bowman of Canton, Ohio, leased a total of 420 acres on 14 leases in Zilwaukee and Kochville Townships.

John Hopkins secured a lease on 1 acre owned by Mr. and Mrs. Henry Vagts and Anna Sommenberger of Carrollton, located in the Brechtelsbauer Addition.

New Companies Enter Field

The Wells-Schmidt Co. has secured a lease on the Whittier Mill property, lying north of Davenport Street on the west side of the river. The southern limits of the property is Ace Park at Mary and Davenport Streets. Work was started on the erection of a derrick at Oak and Pine Streets. This well will test territory southeast of production which some believe should tap the best part of the pool. The contract for drilling the well has been let to Thompson Brothers, of Newark, Ohio.

The Great Lakes Oil Co. has secured a number of leases within the field. Tools have been ordered and are expected to arrive within a few days when it will be decided where the first venture of the company will be made. John K. Swanson is trustee pending the incorporation of the company.

CENTRAL WEST FIELD

(Continued from Page 60)

on No. 8 on the Schulte farm, Section 16.

Better Than Reported

In Jefferson Township, Adams County, the well brought in on the William Smitley farm, by Harmon and Watts was even better than reported. The well which is No. 2 on the farm, pumped 75 bbls., and failed to lower the fluid in the hole, and looks like the best producer yet found in the pool. No. 3, same farm, is under way, while the same parties are working at No. 7 on the Mrs. Mary J. Niblick farm of 242 acres, Section 6. W. E. McKelvy and others are drilling No. 2 on the William Bollenbacher 40 acres, Section 6. George S. Lacknett has moved in a drilling outfit for No. 1 on the Dan Boze 80 acres, which is offsetting the good well on the Smitley farm. Alvin C. Spindler of Pittsburgh, is starting an offset to the Smitley well, and on the Doctor Wilson 39 acres, Section 7. Hanes Brothers, of Newark, Ohio, are doing the contract work on this well. McKelvy and others are also starting a well on the Joe Peel 80 acres, Section 6, not far from the Smitley well. Ray Grimm, of Fort Laramie, Ohio, is moving in a string of tools and will start a well on the McDaniel farm. In Wabash Township, same county, Fink & Smith of Fort Wayne, are starting their second well on the Mrs. Dan Jawbacker farm, Section 17. No. 1, on this farm, is reported doing around 7 bbls. daily of nice clean oil. Chicago parties are starting No. 3 on the Armstrong heirs' farm, Section 35. N. B. Daugherty is starting No. 3 on the J. G. Steiner farm, and Kelly & Daugherty are starting a test on the B. Parr 160 acres, Section 12, Wabash Township. R. S. Anderson and P. Christenson, are arranging to start a second test on the Stengle-Craig farm, of 90 acres, Section 36, Monroe Township, same county.

In Salamonie Township, Huntington County, the March Petroleum Co. is drilling No. 11 on the J. L. Priddy farm, Section 20, and Wood & Canaday are doing the same at No. 7, on the W. D. Bonifield farm, Section 19.

In Bear Creek Township, Jay County, M. T. Smith and others are drilling No. 4 on the Irvin Campbell farm, Section 15, and in Penn Township, same county, Claud Thompson is drilling a test on the Sarah J. Bourne farm, Section 18.

In Harrison Township, Blackford County, the Montpelier Development Co.'s No. 2 on the A. F. Gerard farm, Section 1, is a 1-bbl. pumper, with a second well drilling.

In Maumee Township, Allen County, the Ledford extension to the Payne Field of Paulding County, Ohio, Estes, Manion and others' No. 1, on the J. F. Butt farm, across the river from the "Horseshoe Bend" of the Maumee River, is estimated at 10 bbls. Nos. 2 and 3 are being started on this lease. The owners expect to drill 10 wells, the contract reported being made with H. P. Manion for the drilling.

Gibson County

In southwestern Indiana, Washington Township, Gibson County, Bell Brothers and others are drilling a test on the Joseph Armstrong farm, Lot 108, while the Euclid Oil Co. has No. 3 rig on the Veirling heirs' farm, Lot 28, same township. The test well of Enlow and others on the John Enlow farm, is in Section 15, Montgomery Township, Gibson County, near the big Orange Pond, about 4 miles southeast of Mt. Carmel, on the east side of the Wabash River. This well is purely wildcat and getting to a depth where oil should be found, if it exists there. It was formerly reported in White River Township. In Patoka Township, same county, the Ohio Oil Co. abandoned Nos. 2 and 3 on the J. S. Dickson farm, Section 2.

In Logan Township, Claud Chandler and others are drilling No. 1 on the Maud William farm, in the Miley Pool, Section 14. Henry Skidmore and others are drilling No. 3 Walter Miley farm, same section. The Consolidated Oil Development Co. and others are getting ready to start No. 4 on the C. Atkinson farm, Section 22, as is the Noble-Bolyard Oil Co. in its No. 10 on the D. S. Huey farm, Section 27. Gray and others have a rig up for a test on the Ern Wilson farm, Section 13, and the Wiser Oil Co. is drilling a second test on a part of the same landowners' holdings. In Clay Township, A. B. Bement is drilling No. 5 on the C. Waltz farm, Section 14. In Monroe Township, the Gem Oil Corp. is

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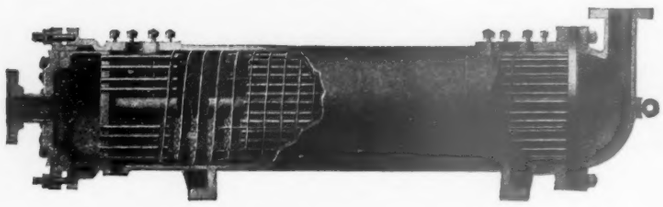

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drilling No. 3 George A. Taylor farm, Section 9, while in Washington Township, Molton & Noble are drilling a wildcat on the Eliza Martin farm, Section 7.

In Gill Township, Sullivan County, Fred Bays drilled in a gas well estimated at 80,000 feet at a test in the northeast corner of the C. W. Hardy farm, in the southwest quarter of the northeast quarter of Section 35. In Fairbanks Township, the Ohio Oil Co. is drilling No. 22 on the J. V. Merrill farm, Section 25, and Hollingsworth and others are drilling No. 5 J. F. Harrison, same section.

The first duster for a long time has been completed in the pool located in Veale Township, Daviess County, which was Neal and others' test on the D. K. Morgan farm, Section 27. In Washington Township, same county, the Ohio Oil Co. is drilling a test on the J. F. Graham farm, Section 9, and the Geiger Oil Co. is working at a test on the J. W. Backus, Section 10.

Illinois

One of the most interesting wells at this time in any section of Illinois, is the deep test being made by the Ohio Oil Co. on the Jess R. Middaugh farm, Section 32, Bridgeport Township, Lawrence County, and in the midst of the one-time wonderful producing area of the State. It is 3 miles west of Lawrenceville and found the Trenton rock sand at 2,970 feet, and this fact is of importance to all interested in oil development. Oil was not found in paying quantities in the top of the sand, but the discovery proves that oil-bearing sand does exist in the southeast Illinois territory below the level at which oil has been found in that particular area. The oil found at the 2,970-foot level was of very high quality. The Trenton rock formation varies in thickness from a thin shell at its outcropping point to a known thickness of close to 900 feet, which was the depth that was passed through in a well on the farm of ex-President Rutherford B. Hayes, in Portage Township, Wood County, Ohio, in the old Lima Field, more than 30 years ago. Oil is found at various depths within this formation from just below the cap rock to a known depth of 560 feet in the formation. Only a few days ago the Ohio Oil Co. found a 45-bbl. producer at 360 feet in the Trenton sand on the Slauterbeck farm, Bloom Township, Wood County, Ohio.

Aware of the characteristics of the Trenton Rock, the Ohio Oil Co. will continue drilling through the stratum found on the Middaugh farm, with the hope of striking a pool or pools of oil similar to those found in the same formation in northwestern Ohio and east central Indiana. What success will mean to the local oil fields is almost impossible of description, since it would completely revolutionize the industry in this section.

The Ohio Oil Co. is using a 6-inch casing where the drill entered the Trenton rock, and for that reason it will experience little difficulty going down through this stratum, which is largely of limestone formation. The drilling has been going on for several months, and the drill has encountered a lot of hard rock, especially what is known as the Mississippi rock, at about 2,600 feet. Just before reaching this rock, the drill went through a black shale which yielded some oil, and there has been considerable trouble shutting off water at various depths. When the oil was struck at the top of the Trenton rock, a small flow of gas was also found, sufficient, it is thought, to furnish fuel to complete drilling the Middaugh well.

The Ohio Oil Co. has a twofold object in making this deep test. One is to learn if deep drilling will pay in this section, and if so, the company will re-lay its pipe to accommodate the production this field will require. If the deep test should not prove the success hoped for, the company will re-lay its pipes which are badly rusted with smaller tubes.

Rank Wildcats

Much interest is manifested in the wildcat well drilling by Paul C. Irwin on the O. F. Conklin farm, some distance to the north of Jacksonville, the county seat of Morgan County, and quite a distance from known production, although showings of both oil and gas have been found in wells drilled in the same county. The well has been estimated good for 25 bbls., but its exact value will not be known until put on the pump and pumped for a short period to learn how the sand will maintain its production. Mr. Irwin has done quite a little work through Morgan County and stayed by it with the belief that oil existed there and is entitled to find the product after spending quite a sum in tests over a wide area. Morgan County lies directly west of Springfield, the state capital, and just south of the Cass County line in the western portion of the State, and southeast of the Plymouth-Colmar Field of McDonough County. Other tests will be made in the vicinity of the Irwin well. The exact location of the well is in Section 18-15n-9w.

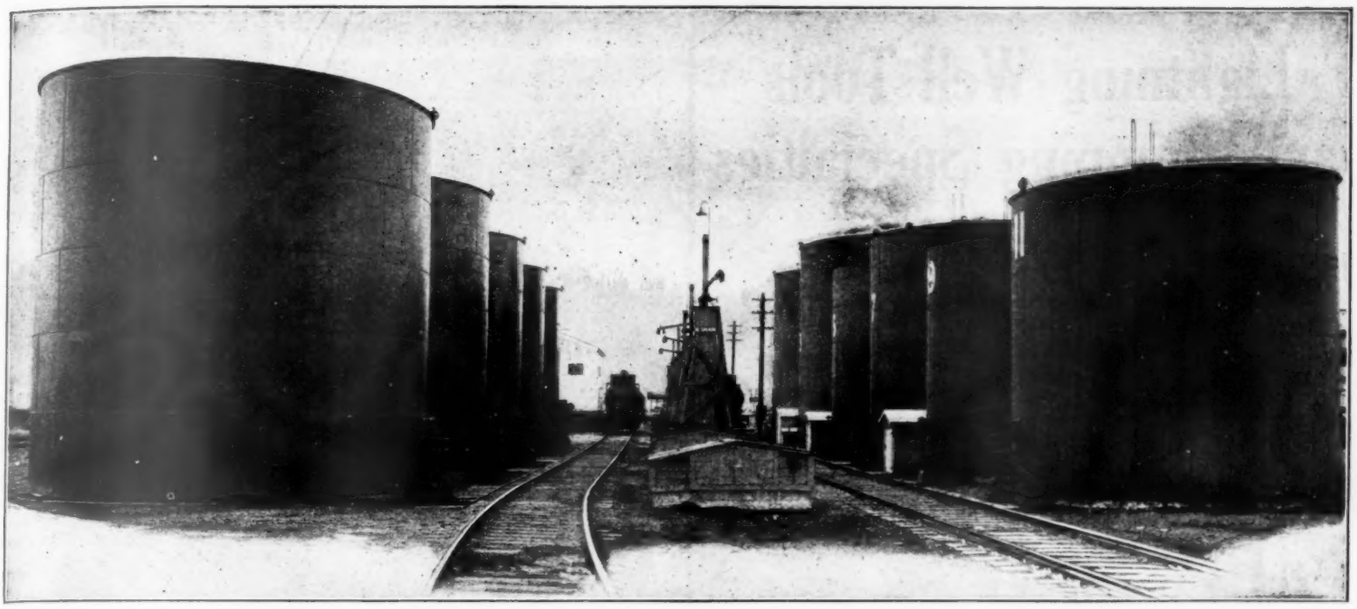
Other Illinois Developments

The Allendale Field of Wabash Township, Wabash County, which has been rather quiet during the first part of the season, is now picking up and some very nice wells are being found. The Breen Oil Co.'s No. 2, in the southweast corner of the John Breen farm, in the northeast quarter of Section 2, has been completed and produced an initial of 120 bbls. Sand was topped at 1,425 feet and drilled 17 feet in the sand. Mayhugh and others' No. 8, on the Kogan heirs' farm, same section, is in and reported showing for around 150 bbls. initial. The Hope Oil Co.'s Nos. 4 and 5, on the W. M. Banks farm, Section 6, northeast of Allendale, are estimated all the way from 80 to 120 bbls. each, while Joe S. Young, Jr. and others' No. 1, on the A. R. Gehr farm, Section 6, and the closest well to the Wabash River, is showing for around 60 to 80 bbls., and may do much better when connected to tanks and put on the pump. The Gehr well, the farthest east producer in the field, has caused quite an active drilling campaign along the banks of the Wabash River. One bad hole was found the past few days to the northwest of the Gehr and that was the Adams Corner Oil Co.'s second test, 160 feet from the south line and 600 feet from the west line of the W. O. Johnson farm, same section, which was dry at 1,387 feet. The Gehr well has been put on the pump and showed 60 bbls. the first 12 hours and should make an 80-bbl. initial producer. Mack Leighty and others have made a location for a well on property adjoining the Gehr farm to the north, while the Admas Corner Oil Co. is starting its No. 9, on the north line of the Mack Madden farm, and just south of the Gehr farm well, but in Section 7. Joe S. Young and others are starting a well on the Kate Keyser lease, west of the Gehr farm producer. On another of the Kate Keyser farms, Wirebaugh and others are drilling Nos. 4 and 5, and both are due for completion within a very short time. J. W. Whiteside and others are drilling No. 3 C. E. Courter farm, Section 24. Ellison and others are drilling No. 4 Collison heirs farm, Section 12, and Charles Olendorf and others are working at No. 4 Lee farm.

In Centralia Township, Marion County, the Petro Oil & Gas Co. drilled a dry hole in No. 8 in the northeast corner of the A. W. Webster farm, Section 30, at 796 feet.

Lawrence County

In Dennison Township, Lawrence County, the Ohio Oil Co.'s No. 6 well, 600 feet from the south line and 200 feet from the east line of the William Gillespie farm, Section 11, struck the top of the Ridgley sand at 1,239 feet and passed through that formation at 1,260 feet, but was drilled to a total depth of 1,729 feet, nothing being found of value below the Ridgley sand pay where it was given a 60-quart shot, and made 45 bbls. the first 24 hours. Same company found the Bridgeport sand at from 945 to 959 feet and went to a total depth of 1,251 feet at its No. 6 on the Victor B. Harding 38 acres, Section 11, where it was



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When you want finishing coats of white or light-colored paint to reduce heat-absorption and decrease oil-evaporation, use Dutch Boy white-lead on top of an undercoating of Dutch Boy red-lead. Dutch Boy white-lead is well-known for its weather-resisting properties.

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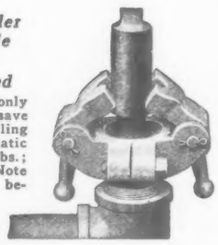

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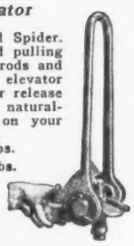

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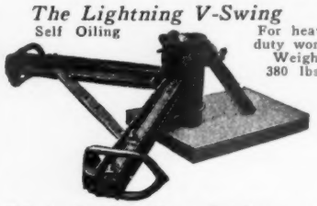

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given a shot of 60 quarts, making only 1 bbl. the first 24 hours. Same company is drilling No. 7 on the Ellen Lutz farm, Section 21. Same company abandoned Nos. 45 and 50 on the Lewis K. Leighty farm, Section 35; Nos. 2 and 5 W. A. Gould farm and No. 2 T. I. Gould farm, same section.

In Bridgeport Township, Lawrence County, Snowden & McSweeney's No. 42, in the southeast corner of the C. B. O'Donnell farm, Section 17, which pumped 15 bbls. at 1,386 feet. The Big Four Oil & Gas Co. is drilling No. 2 on the Ellen Lutz farm, Section 20. In Lawrence Township, the Silurian Oil Co. abandoned No. 2 on the Tanguary heirs farm, Section 28. This takes all the wells drilled upon this farm, which has been abandoned.

In Crawford County, Montgomery Township, W. C. McBride, Inc., brought in No. 7 on the C. A. Dickman farm, for 10 bbls., while Walter Squires and others' No. 9 G. B. Ford, Section 15, pumped 5 bbls. In Honey Creek Township, the Selby-Cisler Producing Co.'s No. 49 Claudie A. Reaville farm, Section 31, pumped 2 bbls. at 956 feet. The Ohio Oil Co. is starting its No. 11 on the I. L. Firebaugh farm, Section 36, Robinson Township. The Mahutska Oil Co. is drilling No. 13 P. Miller, Section 15, Oblong Township. L. C. McDowell and others are drilling No. 1 on the Oliver Lawrence farm, Section 7, Honey Creek Township and McNally & Starr are drilling No. 6 A. E. Joseph farm, Section 23, Prairie Township.

EASTERN FIELDS

(Continued from Page 58)

the Berea grit a test on the T. H. Elliott farm. It is showing for a light oil producer.

Ritchie County

On Bear Run, Murphy district, Ritchie County, the Hope Natural Gas Co.'s test on the C. B. Nutter farm, formerly reported a light gasser, has been drilled deeper and good for 1,000,000 feet a day. In Liberty district, Marshall County, the Manufacturers Light & Heat Co.'s No. 7 on the D. W. Keller farm is a gasser in the Big Injun sand.

In West Union district, Doddridge County, the Clifton Oil & Gas Co.'s test on the Silas Spencer farm is a gasser in the Big Injun sand. In Clay district, Wetzel County, the Johns Gas Co.'s No. 5 on the H. H. Antill farm is a duster.

Drilling and Starting Tests

In Liberty district, Marshall County, the Carnegie Natural Gas Co. is rigging up on the William Gorby farm. In the same district, the Decem Development Co. is rigging up at a second test on the Robert Bonar farm. In Union district, the Spider Oil & Gas Co. is rigging up on the Anna Jochum farm.

In Union district, Lincoln County, Roy & McComas have started to drill on the R. Sias farm. In Sheridan district, same county, H. H. Dial & Co. have started to drill on the J. M. Ferrell farm. In Jefferson district, Kanawha County, the Tampico Oil Co. is rigging up on the George K. Mets heirs farm.

In Court House district, Lewis County, William Rafferty and others are drilling at 2,800 feet on the J. H. Livingston farm. In Geary district, Roane County, the United Fuel Gas Co. is rigging up on the F. K. Vineyard and Mary C. Smith farms. In Walton district, the same company is building a rig on the W. C. Campbell farm.

The Ohio Fuel Oil Co. has completed a rig on its No. 3 W. C. Bush 48-acre farm in Troy district, Gilmer County. Pittsburgh & West Virginia Gas Co. has completed a rig on its No. 3 Mary L. Day farm in Southwest district, Doddridge County. On Poca River, opposite the mouth of Green Creek, Harper district, Roane County, the Chartiers Oil & Gas Co. has completed a rig on No. 1 Norma Haynes farm.

In Union district, Ritchie County, E. E. Zinn and others have completed No. 1 on the M. N. Prunty farm in the Big Injun sand at a depth of 2,062 feet and have a 10-bbl. pumper. The Pittsburgh & West Virginia Gas Co. drilled a dry hole on the Edward Beck farm in the Big Injun sand at a depth of 1,995 feet. M. G. Taylor and others completed No. 1 Henry Bruffy in the salt sand at a depth of 1,521 feet and have a gas well.

In New Milton district, Doddridge County, George B. Trainer has started to drill a test on the W. F. Kidner farm. In the same district, Trainer & Travis are rigging up on the Verner Noble farm. In McClelland district, the Buckeye Oil Co. is due in the fifth sand on the William Ford farm.

In Battelle district, Monongalia County, the Owens Bottle & Machine Co. is casing at 2,255 feet its second test on the A. Whistler farm. In Sherman district, Wood County, the Euclid Oil & Gas Co. is rigging up to drill deeper a test on the C. Mollohan farm. In the same district, the White Pine Oil & Gas Co. has started to drill on the John R. and G. B. Francis farm. In Center district, Calhoun County, the Ohio Fuel Oil Co. is rigging up on the T. McDonald farm.

Southeastern Ohio

In the northeast quarter of Section 21, Knox Township, Jefferson County, O. M. Stratton has completed in the Berea grit a test on the H. Wilson farm, not good for more than 2 bbls. a day. In the southeast quarter of the same section and township, S. H. Boyce & Co. completed in the same formation No. 9 on the W. Groves & Co. farm. It produced 13 bbls. the first 24 hours after shot.

In Cambridge Township, Guernsey County, in Lot 5, Homer Forsyth has a duster at a test on the William Nicholson farm. In Section 26, Newton Township, Licking County, the North Fork Oil Co.'s Nos. 28 and 29 on the Edward McKinney farm are good for 5 and 12 bbls., respectively. No. 30 on the same farm is drilling. In Clay district, Knox County, Roy Decker and others are drilling a test on the James Burkholder farm. In Morgan Township, A. J. Weidman & Co. are drilling a test on the G. O. Hays farm.

In Section 10, Hopewell Township, Licking County, the Pure Oil Co.'s test on the N. A. Coome farm has been completed and shot in the Clinton sand and good for 5 or 10 bbls. a day.

In the southwest quarter of Section 23, Washington Township, Hocking County, O. F. Pierpont & Co. completed in the Clinton sand No. 3 on the O. F. Pierpont farm. The showing of oil developed was so small they are undecided as to putting it to pumping.

In the northwest quarter of Pike Township, Coshocton County, Ray Dairy and others completed and shot in the Clinton sand a test on the C. E. Moore farm. It flowed 10 bbls. the first 12 hours.

In the southwest quarter of Section 28, York Township, Morgan County, the Pure Oil Co. has completed and shot in the Berea grit No. 12 on the William Eppley farm, good for 12 bbls. a day. In Section 29, same township, the Sun Oil Co.'s No. 6 on the Joseph Longstreth farm is a gasser in the Berea grit.

In the southwest quarter of Section 21, Fallsbury Township, Licking County, Guy Shafer completed and shot in the Berea grit a test on the Joseph C. Haney farm. It produced 15 bbls. the first 24 hours after shot. On Duck Creek, Aurelius Township, Washington County, County, John F. Ward & Co. completed a second test on the Wharton heirs farm. It is a very light pumper in the Buell Run sand.

Noble County

In the south half of Section 19, Enoch Township, Noble County, A. S. Rucker and others have completed a test on the Fannie Shafer farm. It is a very light pumper in the Buell Run sand. In the southeast quarter of Section 25, same county, J. H. Yerain & Co. have a duster in the Buell Run sand at No. 5 on the E. C. Brown farm.

Morgan County

In Section 33, York Township, Morgan County, the Pure Oil Co.'s No. 9 on the Isaac Smith farm is good for 10 bbls. a

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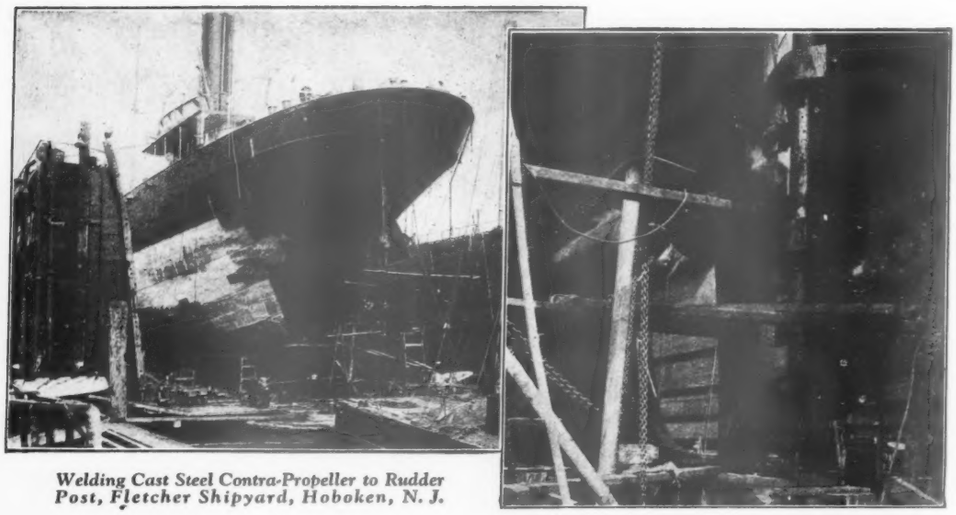

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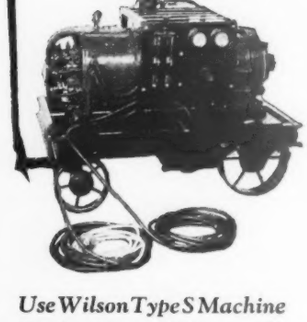

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day in the Berea grit. In Wayne Township, Monroe County, J. H. Brown & Co. completed a second test on the F. D. Dougherty farm, not good for more than 2 bbls. a day in the Keener sand.

In Barlow Township, Washington County, the Ohio company has drilled a test on the C. C. Hayer farm through the Maxon sand good for 5 bbls. a day In Section 8, Hopewell Township, Licking County, the Pure Oil Co. has started to drill a test on the J. H. Drumm farm. The Midland Oil Co. is drilling a test on the E. M. Denny farm.

Producer in Meigs County

In Lot 1,217, Suttton Township, Meigs County, the Pure Oil Co. completed No. 5 on the Yost heirs farm. It produced 20 bbls. the first 24 hours after completed and shot in the Berea grit. In Section 7, Knox Township, Vinton County, the Gordon Oil Co. is drilling a second test on the Wesley Washburn farm. In Section 31, same township, Beagley & Shaffer are drilling a second test on the William Dearth farm.

Guernsey County

Guernsey County has supplanted Holmes County as the most active in development work. Drilling for gas is the principal incentive for this activity in Guernsey County. Very few completions during the month had a production of less than 1,000,000 feet and others ranging from 2,000,000 to 11,000,000 feet. The last 11 wells completed in this county had an aggregate production of 50,437,000 feet. At the present time there are 27 rigs up and 21 wells drilling. This put Guernsey County far ahead of any other county in southeastern Ohio, in the way of new work.

It is expensive territory to develop, the gas being found in the Niagara lime at a depth of more than 4,000 feet. One feature is the way the wells hold up. Another feature is a good market for all the gas that can be produced. In the deep sand territory it is more profitable to drill for gas wells than very light oil producers.

Next to Guernsey County, Licking County is completing the most wells and nearly all light pumpers. The oil is encountered in both the Berea grit and Clinton sand. The cost to drill for production in the Berea grit is very much less than in the Clinton sand.

Week-End Completions

In Brush Creek Township, Fairfield County, Roy Nixon and others have drilled their test on the F. M. Kittle farm through the Clinton sand and dry. In Reading Township, Perry County, the Pure Oil Co. had the same luck at a test on the Edward Thomas farm. In Brown Township, Knox County, the East Ohio Gas Co.'s second test on the Jacob H. Moser farm is a very light pumper.

In Athens Township, Athens County, Cook and others have a very light pumper in the Berea grit at a test on the H. Milliron farm. In the same township, the same parties are drilling tests on the E. Lash and E. P. White farms. In Waterloo Township, the Logan Gas Co.'s test on the P. G. Shaulis farm is dry in the Berea grit. In Alexander Township, J. A. Ronshausen & Co. have a duster in the Berea grit at No. 5 on the J. W. Wood farm.

In Section 10, Perry Township, Licking County, the Pure Oil Co. completed No. 5 on the I. E. Seward & Co. farm. The well produced 60 bbls. the first 24 hours after shot in the Clinton sand. In Section 10, Hanover Township, same County, the Edward H. Everett Co. completed a second test on the Leonard Swigard farm. The well produced 40 bbls. the first 24 hours. In Section 7, Franklin Township, Smith, Hazlett and others got a light gasser in the Berea grit at No. 6 on the Austin Orr farm.

In the southeast quarter of Section 34, Falls Gore Township, Hocking County, the Arkansas Fuel Oil Co.'s No. 12 on the Mary S. Arnold farm is a very light gasser in the Berea grit. In the northwest quarter of Section 11, Green Township, R. A. Duncan & Co. got a light gasser in the same formation at No. 4 on the G. H. Guess farm.

At Bolin Mills, Section 4, Knox County, Bell & Shaw have a 6-bbl. pumper at a test on the John W. Stanley farm. In the southwest quarter of Section 7, Independence Township, Washington County, Harris & Co.'s test on the A. Heintzelman farm is a light pumper in the Elizabeth sand, at a total depth of 2,980 feet. In the southwest quarter of the same section, Grau and others have drilled a test on the William B. Kiggins farm through the Big Injun sand. It is a duster. In Section 29, Alexander Township, Athens County, Cook and others are drilling a test on the E. R. Walker farm. In Madison Township, Licking County, the Pure Oil Co. has started to drill a test on the Arthur Orr farm.

In the southwest quarter of Section 2, Jackson Township, Knox County, the Pure Oil Co. completed and shot in the Clinton sand a test on the A. L. Miser farm. The well produced 40 bbls. the first 24 hours.

In the northwest quarter of Section 21, York Township, Morgan County, the Pure Oil Co.'s No. 4 on the W. F. Williams farm has been completed and shot in the Berea grit, good for 10 bbls. a day. The Braden Oil Co. and Depuy Brothers completed a second test on the Harry Felter farm, Section 9, Lawrence Township, Washington County. It is a duster in the second Cow Run sand.

In Section 19, Washington Township, Monroe County, the Whitten Oil Co. and others have now drilled a second test on the H. H. Smith farm through the Squaw sand and is a very light pumper. In Section 32, Franklin Township, H. A. Hendershot has completed in the Big Lime formation No. 5 on the Charles Haught farm, good for 2 bbls. a day. In Section 23, Washington Township, the California Producing Co. has drilled a test on the M. J. Heddleson farm through the Keener sand, a very light pumper. J. A. Garner & Co. are due in the sand at No. 6 on the J. T. Scott farm

Southwestern Pennsylvania

Thomas McDermott has drilled his No. 1 well on the Thornburg farm to the fifth sand and it is good for 1 bbl. oil and 200,000 feet of gas per day. It is located in Robinson Township, Allegheny County. In the Whipple Pool, Ralph Steebe has completed a test on the Miller farm. It is a fair gas well in the Boulder.

The southwest Pennsylvania fields reported no completions at the close of the week. A feature of the week was the rather rapid decline of the largest producers in Morris Township, Greene County. The gauges for the last 24 hours were as follows: Consumers Fuel Co.'s No. 1 Thomas Anderson, 30 bbls.; Nos. 2 and 3 T. F. Rutan, 60 and 65 bbls.; J. S. Rutan, 45 bbls.; No. 1 Alfred Rutan, 110 bbls., and Carnegie Natural Gas Co.'s No. 1 J. S. Rutan, 55 bbls.

DRILLING WATER PERMITS

AUSTIN, Tex., Sept. 4.—Six permits to divert water for drilling purposes were granted to oil companies by the State Board of Water Engineers as follows: Humble Oil & Refining Co., to divert 110 acre-feet annually in Throckmorton County from the Clear Fork of the Brazos and 110 acre-feet annually in Shackelford County from the same source; Waggoner Refining Co., two permits to divert small amounts in Wilbarger County from Beaver Creek, tributary of the Red River; Humphreys Corp., to divert 23.24 acre-feet annually from Bell Branch, a tributary of Mud Creek, a tributary of the Neches River; The Texas Company, to divert 50 acre-feet annually from Farmers Creek, a tributary of Red River in Montague County.

AUSTRALIA BUYING BUSES

Australia, which remains the leading market for passenger cars and motorcycles, became also during the first half of this year the principal country of destination for trucks and buses, taking the place of Italy which had headed the list during the first six months of the year.

GUARANTEED PERFORMANCE!

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"Cyclone" Hoists have the exclusive *single unit principle of construction* which means that sizes are increased by increasing each part, thereby eliminating the objectionable method of obtaining larger sizes by doubling up on smaller sizes. Result? The same simple, compact construction in all capacities of "Cyclone" Hoists.

"Matchless" Trolleys have Flangeless Track Wheels, an exclusive, patented feature. Result? No binding or scraping on edge of beam. Trolley moves freely around curves.

"Matchless" Trolleys have Timken Tapered Roller Bearings which take up all end and radial thrust so apparent in other I-beam trolleys. Result? Friction is minimized and axles and frame are protected from wear.

Every other detail of construction of "Cyclone" Hoists and "Matchless" Trolleys represents the best engineering practice. For complete information get in touch with the "C-M" representative in your territory. If you don't know where to locate him write us direct.

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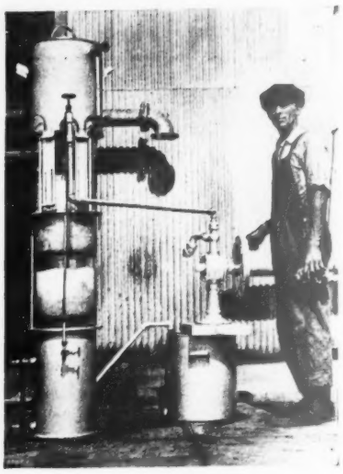

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OIL COUNTRY TUBULAR GOODS BUYING IN VERY GOOD VOLUME

By B. E. V. Luty

PITTSBURGH, Pa., Sept. 7.—Buying of oil country tubular goods has decreased somewhat farther in the past week, but is still of very good volume. August bookings of mills were not much below those of July, which were exceptionally heavy. Further decreases are to be expected as the season advances.

Merchant pipe demand is running quite fair, particularly for the time of year, but has decreased considerably in the past 30 days. It is even reported that some mills have surplus production now in merchant pipe and are using it to replenish stocks, which got to a very low ebb two or three months ago.

Pipe mills are offering the same delivery promises as formerly four to five weeks, on oil country goods generally. They hold that they are assured of substantially full operation through the month of October in their lap weld departments, chiefly on the basis of business already on books.

No line pipe business is reported as having been placed recently, but shipments still run heavy on old orders, some of which are now nearing completion. It is claimed that much laying of line pipe is under consideration and that when mills become anxious for line pipe orders the selling will not be difficult. Reports as to the status of the gas line to Kansas City are remarkably vague, it being merely said in a general way that negotiations are in progress.

Pipe Mills 90 Per Cent

Pipe mill operations may still be estimated at fully 90 per cent, the little idleness there is being confined almost entirely to butt weld capacity.

The steel business in general is showing no improvement over conditions of the past two months, but rather a little easier tone. Such a showing may be considered unusual for this time of year, but the activity in June, July and August was quite unsual, and this is the counterpart, for when there is no dip the rebound that would naturally follow a dip could not occur.

Steel mills had a remarkable performance in operating at an average rate of nearly if not quite 80 per cent in June, July and August, for relatively light production has been the usual experience in these months, whereas production in the past three months was at but little lower rate than production in the first five months of the year while it was just equal to the average rate during the whole of 1925, the record calendar year in steel production.

Chances are that the remaining four months of the year will show a slightly lower rate of production, chiefly by there being seasonal decreases in steel requirements in several lines, such as rails, oil country goods and automobile steel. Shipments of fabricated structural steel will run heavy for some time still but will hardly avoid a decrease in the last month or two of the year.

Sheet Market Firm

The sheet market is now in quite firm position. Regular prices have not been advanced, but in some lines they were almost nominal two or three months ago. Meanwhile practically all the shading has disappeared. Some of the producers have announced a new card of gauge differentials, making 24 instead of 28 the base gauge, but it is far from certain that the proposed practice will come to prevail.

The time for contracting in bars, shapes and plates for fourth quarter is at hand and propects of an advance over third quarter prices are diminished. Ordinary lots down to carloads have been obtainable at 2.00 cents for bars and shapes and 1.90 cents for plates. Naturally large contract buyers will expect concessions from these figures.

Standard billets continue firm at $35, ordinary forging billets being at $5 extra, or $40, with still higher prices obtained on special qualities. The market is holding very steady, there having been scarcely any fluctuation for nine months.

Petroleum Geologists Making Preparations For Meeting at Denver

The American Association of Petroleum Geologists will hold a regional meeting September 20-24 at Denver, Colo.

It is planned to stress Rocky Mountain geology in a way to show how the Mid-Continent, Rocky Mountain and Pacific provinces are generally related. The plan is to have six or eight leading papers, devoting as much as two hours to a paper and its discussion, if necessary. Among such, there probably will be a presentation by Bailey Willis on the Relation of General Structural Pacific Coast Geology to That of the Rocky Mountains; one by J. V. Howell on the Amarillo District; one by J. W. Beede on the General Geology of Southwestern Texas; one on Western Kansas, and one by T. S. Harrison and R. C. Coffin on Rocky Mountain Geology Related to Petroleum.

Many other papers are to be presented by posting the manuscript and exhibits on bulletin boards in the anteroom where interested groups may study and discuss them. It is planned to have field trips to the Fort Collins-Wellington oil fields and the Government oil shale plants near Glenwood Springs.

The following committee is in charge of arrangements at Denver: General chairman, Charles M. Rath, Box 240, First National Bank Bldg., Denver, Colo.; program, Dean E. Winchester, chairman, Joseph S. Irwin; publicity, Cassius A. Fisher; finance, Max W. Ball; reception and field trip, Charles T. Lupton, chairman, James M. Douglas, E. M. Parks, Junius Henderson; registration, J. P. D. Hull, E. Walter Kramport; entertainment, E. Russell Lloyd, chairman, Harold W. Lowrie, Paul B. Whitney, Mrs. Thomas S. Harrison.

The geologists are holding a joint session at this convention with the western division of the American Mining Congress, the Colorado section of the American Institute of Mining and Metallurgical Engineers and the American Silver Producers Association.

Alex W. McCoy, 1020 Patterson Bldg., Denver, president of the American Association of Petroleum Geologists, states that in order not to conflict in any way with the New York meeting of the Association in November, only papers dealing with the Rocky Mountain district, western Kansas, western Oklahoma, western Texas and California will be presented at the Denver meeting.

SHELL REPRESENTATIVE VISITS MID-CONTINENT

Dr. W. P. Klein, representing the Royal Dutch-Shell Co., visited the Tulsa offices of the Roxana Petroleum Corp. last week, prior to a tour of the Mid-Continent fields. He is on his way to the Dutch East Indies, stopping at points throughout the United States for a study of production and exportation problems. At the Bureau of Mines in Washington he spent several weeks.

In an interview Doctor Klein said: "The one fact that impresses me most in the oil industry of America is that despite the continued haste required in developing new fields, due to such great competition, oil companies have still found time to develop new and more efficient methods of production."

American production methods are far superior, and for this reason he is conducting a survey of the American industry. Doctor Klein will also visit the California oil fields, after which he will sail to the East Indies.

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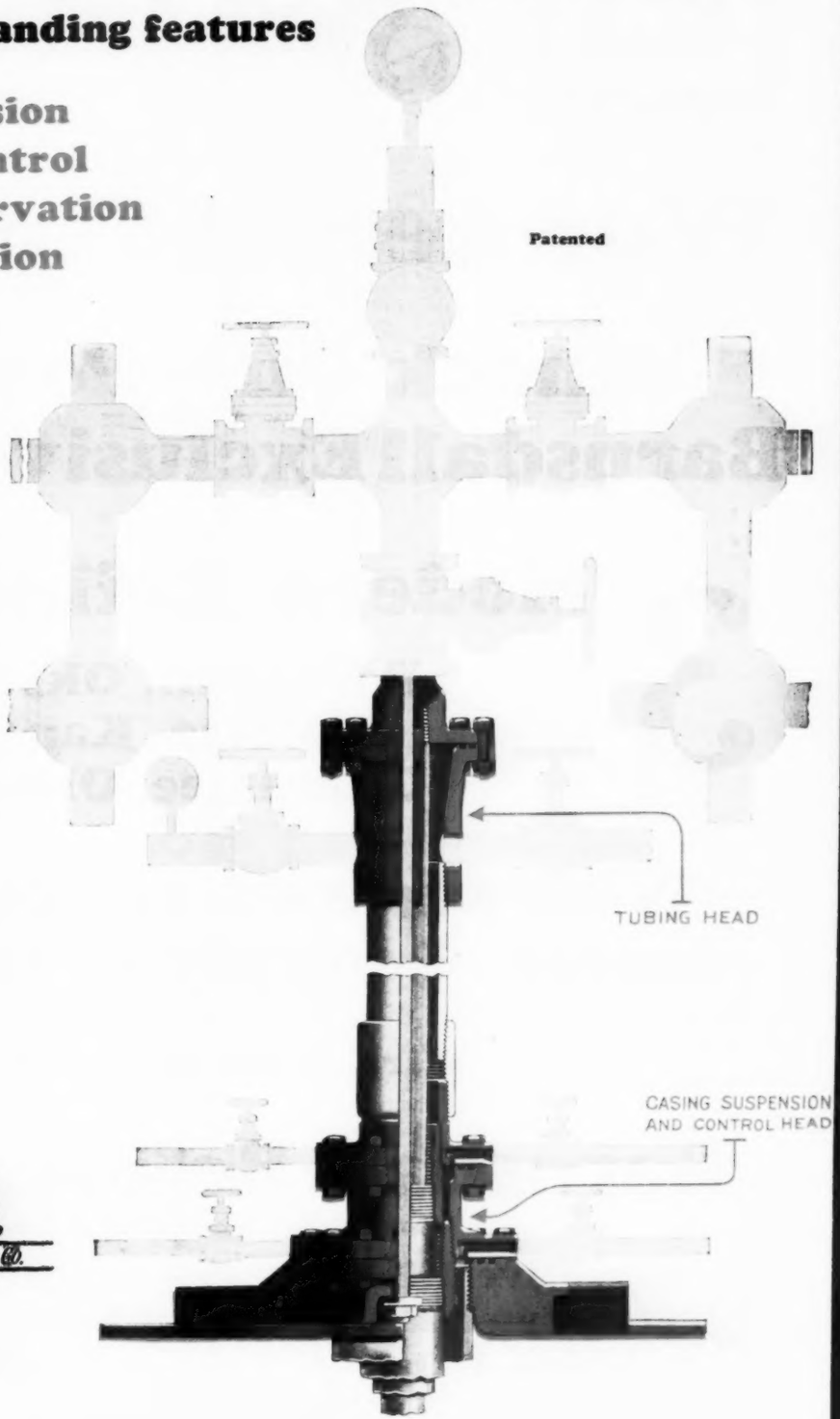

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OLDEST KNOWN SIGNS OF OIL IN AMERICA HIDDEN IN DEEP WOODS

Hidden in a deep thicket, seldom visited by any living thing save the birds that flit among the bushes that hide it from view, is the first oil pool known to white men in the Western Hemisphere. It is the oil spring near Cuba Lake, Allegany County, New York, discovered by Father Joseph de la Roche Daillon and called by him La Fontaine de Bitume.

Pere Joseph, a French priest, of what order we are uncertain, doing missionary work among the Indians in what is now New York State, found the spring on July 18, 1627, and wrote a letter describing what he had found and the use to which the oil was put by the Indians, with whom it was considered "good medicine." Father Joseph wrote "it is a good kind of oil, called by the Indians 'antonontons.'"

That was 300 years ago, yet the spring, which has no doubt been in existence for ages, continues to ooze oil as the nearly full tank in the picture shows.

This oil spring is located a few miles northwest of the Richburg oil field in Allegany County, but no one has yet come out with definite proof of where the oil originates.

The fact that it is the oldest "oil region" in the United States is not featured by the promoters of Cuba Lake as a summer resort. As a matter of fact, it is difficult to find the spring. L. B. Holland, petroleum engineer, an Oklahoman who, until his recent resignation, was with the Petroleum Reclamation Co. directing its field operations in the Bradford district, took the picture from which the accompanying cut was made, and he had to comb the woods to locate the spot where the tank and the spring were hidden by tree and bush. Holland calls it "the first oil market in America."

Oil spring at Cuba Lake, N. Y., where a missionary priest first discovered petroleum on the Western Hemisphere in 1627.

CANADIAN FIELDS

(Continued from Page 56)

to test the lower structures of the Bow Island gas area for oil.

South of Skiff, Devenish Petroleums, Ltd. is reported below 400 feet and drilling. South of the border, considerable interest is shown in the testing of the Barthelote dome, close to the Alberta boundary. The Kal-Mont and Craig-McCutcheon interests are rigging up for a joint test in Section 28-36-2e. On the Grassy Butte structure, the Bell-Fey test is rebuilding the rig. Pass Oils, Ltd., of Lethbridge, financed by Canadian interests, has located a test nine miles east and a little south of Kevin, and just south of the Rice-Fulton holdings. D. Hagerman, superintendent of the Queen City Oil Co., will put down the test under contract. A second well is to be drilled on the same lease; after which a test may be put down on acreage on the Alberta side.

Jumping Pound Field

A second field, similar to that already developed in the Turner Valley, is indicated in the Jumping Pound district west of Calgary, where the Imperial Oil, Ltd. Bow River No. 1 well is reported to have struck a heavy flow of wet gas in the Madison limestone at 3,400 feet depth. No information is available as to the capacity of the well, but it is reported to be condensing crude naphtha in considerable quantities. The crude naphtha is approximately 73 degrees and is stated to be similar to the production secured by the Royalite No. 4 and McLeod Oil Co. No. 2 wells in the Turner Valley field, and production appears to come from a similar sand in the Madison limestone.

The Jumping Pound field is a foothill area, similar to the Turner Valley, situated approximately 25 miles due west of Calgary, and a short distance to the north of the Turner Valley. Imperial-Bow River No. 1 is the only test yet carried to any depth in this area and is the only test now drilling, though the Mount Royal Oil Co. has a location.

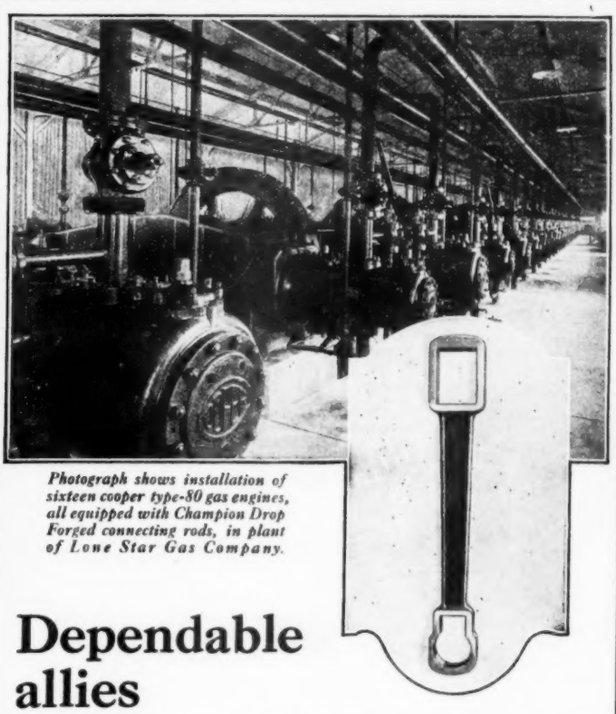
In the Ontario fields, Imperial Oil, Ltd. has optioned practically the entire acreage of the old Bothwell shallow field with a view to mining the oil sands by the Ranney process. Acreage under option is stated to include the Carman-Fairbanks, Walker Oil Co. and Bothwell Oil & Gas Co. holdings. Three diamond drilling tests to determine the extent and thickness of the oil sands are now being drilled, one of them on the Walker Oil Co. leases and another on the Bothwell Oil & Gas Co. acreage. It is planned to test thoroughly the area by diamond drilling and if these tests prove satisfactory to sink shafts to mine the oil still remaining in the sands. The preliminary surveys were conducted by Engineer C. Jackson and W. Roliff of Toronto. The present Bothwell shallow field was first opened about 1894, and comprises several hundred small pumping wells, producing from horizons in the Onondaga limestone. It is similar to the Petrolia-Enniskillen and Oil Springs fields. It is unofficially reported that Imperial Oil, Ltd. has also optioned extensive acreage in these fields, but will make the first test of the mining process in the Bothwell area.

PRAIRIE P. L. SHIPMENTS

The Prairie Pipe Line Co. reports that its crude shipments for August were 4,005,484.81 bbls., or an average of 129,209 bbls. per day. These shipments do not include oil produced or purchased by the Prairie Oil & Gas Co. and shipped to the Gulf Coast. This latter oil is transported through the Pure Pipe Line of Texas, which is controlled by the Prairie interests. The Prairie pipe line shipments above given go northerly.

A. E. KLAUSER DIES

TOLEDO, Ohio, Sept. 4.—Arthur E. Klauser, 68, for years prominent in the business life of Toledo, died Sunday afternoon at Robinwood Hospital. When the Trenton Rock fields were opened Mr. Klauser with his brothers, Herman R. and Charles W., embarked in the oil industry and held some very fine producing properties.



Photograph shows installation of sixteen cooper type-80 gas engines, all equipped with Champion Drop Forged connecting rods, in plant of Lone Star Gas Company.

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OKLAHOMA FIELDS

(Continued from Page 44)

19n-10e, at a depth of 2,620 feet. Also its No. 4 (10 acres), SW cor. SW, same section is dry at 2,070 feet.

Sand Springs Home's No. 3 Burgess, SW cor. NW NW, Section 24-19n-11e, had the pay sand 2,240-45 feet, made 300 bbls. the first 24 hours; drilled deeper to 2,352 feet, encountering hole full of water. Plugged back to 2,336 feet. Completed for 100 bbls. on the pump. J. C. King's No. 1 Partridge, SE cor. NW, Section 4-19n-12e, dry and abandoned at 2,098 feet. In the same section, P. Short's No. 1 NW cor. NE, was dry at 1,301 feet. Sunray Oil Co.'s No. 1-A Sango, NW cor. SW NE, Section 21-19n-12e, dry and abandoned at 2,438 feet. Continental Oil Co. has a dry hole at a depth of 2,344 feet in No. 1 Postoak, SW cor. NE, Section 29-19n-12e. Sunray Oil Co.'s No. 20 Kiefe, SE cor. SE SW SW, Section 31-19n-12e, shot with 30 and 60 quarts from the Wilcox sand 2,038-58 feet, made 25 bbls. Shreves & Schlegel, No. 8 Orcutt, SW cor. NE NE, Section 32-19n-13e, had a small showing of oil in sand 980-90 feet. Dry and abandoned at 1,080 feet. Jolly & Ogg's No. 1-A Harry, NE cor. SE SE, Section 5-16n-13e, dry and abandoned at 2,180 feet. Savoy Oil Co.'s No. 2 Harrison, SE cor. NW, Section 7-16n-14e, shut in for 5,000,000 feet of gas from sand 1,416-19 feet.

Okmulee County, New Work

S. J. Smith, No. 1-A Tiger, NW cor. SW SW, Section 3-17n-11e, is a rig. M. P. Evans' No. 1 Hardridge, SE cor. NW SE, Section 30-17n-11e, rig. Hild and others' No. 18 Oswalt, NE cor. NW SW, Section 6-17n-13e, drilling at 1,000 feet. Barnsdall Oil Co.'s No. 2 Simms, SW cor. NW SW, Section 33-16n-11e, is drilling at 710 feet. Iron Mountain Oil Co.'s No. 3 Grayson, SE cor. SW, Section 34-16n-11e, drilling at 700 feet. Devonian Oil Co. is building rig for No. 1-A Tiger, SW cor. SE SE, Section 24-16n-12e. Harsha & Delaney's No. 1-A Peters, NW cor. SE SW, Section 27-16n-14e, drilling at 1,400 feet. La Beene and others' No. 1 Hill, NW cor. SE SW, Section 23-15n-11e, is a rig. The Texas Company's No. 13 Coleman, C NE SE, Section 34-15n-11e, an old well drilling deeper, drilling at 2,730 feet. C. L. McMahon is spudding No. 1 Forty-Four, NE cor. SW SE Section 9-15n-12e. T. A. Johnson and Gypsy Oil Co. No. 2 Marsey, SW cor. NE NE, Section 16-15n-12e, is a rig. Gray Oil Co. and Devonian Oil Co. are rigging up No. 3 Peloche, SE cor. NE SE, Section 23-15n-12e. Thompson and others' No. 5 Cole, CNL SE SW, Section 28-15n-12e, drilling at 500 feet. Kirkland & Son's No. 3 Gibson, C NE, Section 17-15n-13e, drilling at 560 feet. C. H. Miller and others' No. 1 Roberts, SE cor. SW NE, Section 32-15n-13e, is a location. W. B. Pine's No. 2 Rentie, SW cor. SW, Section 3-15n-14e, drilling at 430 feet. Transcontinental Oil Co.'s No. 1 Kelly, NE cor. SW, Section 3-15n-14e, drilling at 500 feet. Payne-Hyer and others' are moving in machine for No. 1 Frances, SW cor. SE SW, Section 15-15n-14e. C. L. McMahon's No. 1 McKinney, SE cor. NE SW, Section 16-15n-14e, drilling at 1,540 feet. Sheedy's No. 4 McKiney, CWL SW NW, Section 16-15n-14e, is a rig. The Texas Company's No. 8 Bruner, SW cor. SE SE, Section 16-15n-15e, is setting 8¼-inch casing at 1,370 feet; No. 9, CSL SE SE, drilling at 1,600 feet and No. 10, CEL SE SE, drilling at 200 feet.

McCullough Oil Co.'s No. 7 Garrett, NE cor. NE, Section 21-15n-15e, drilling at 1,425 feet; No. 8, CNL NE NE, drilling at 1,720 feet and No. 9 CWL NE NE, is spudding. The Texas Company's No. 16 Garrett, CEL NW NE, Section 21-15n-14e, drilling at 400 feet. Abbott-Dillard & Carter Oil Co.'s No. 1 Sango, NE cor. SE SW, Section 24-14n-11e, is drilling at 600 feet. Devonian Oil Co.'s No. 1 Adams, SW cor. NE NE, Section 4-14n-12e, is drilling at 1,050 feet. Phillips Petroleum Co.'s No. 2-A Smith, SE cor. SE NW NE, Section 4-14-12e, drilling at 850 feet. Kingwood Oil Co. is moving in machine for No. 1 Lacy, SW cor. NW SW, Section 7-14n-13e. K-Ray Oil Co.'s No. 3 Drew, SW cor. SE NE, Section 24-14n-11e, is drilling at 1,300 feet. Future Development Co.'s No. 5 Stevens, SW cor. NE SE, Section 9-14n-14e, is drilling at 1,450 feet. D. Beans No. 1-A Colbert, SE cor. SE, Section 15-14n-14e, is drilling at 560 feet. E. D. Misner's No. 6 Love, CEL SW NE, Section 16-14n-14e, is drilling at 1,605 feet. Clairen Oil & Gas Co. is moving in machine for No. 9 Schacht, SW cor. SW, Section 22-14n-14e M. Board, trustee. No. 14 Corbray, SW cor. SE NW, Section 23-14n-14e, is drilling at 500 feet. C. T. Simth, is spudding No. 1 Corbray, NE cor. SW NE, Section 23-14n-14e. E. J. Lambert has rig on ground for No. 3 Flint C SW SE, Section 27-14n-14e. J. L. Selby is spudding No. 33 Anderson, C NE NW, Section 34-15n-14e. J. N. Powell's No. 2 Anderson, SE cor. SW NE, Section 8-14n-15e, is drilling at 150 feet. Boone and others' No. 4 Rentie, SE cor. NE, Section 18 14-15e, is a rig. Galliger and others are rigging up No. 1 Rentie, NE cor. NW, Section 18-14n-15e. Henry Oil Co.'s No. 1 Lewis, SW cor. NW SE, Section 19-13n-11e, is a rig. King & Jackson's No. 3 Haynes, CNL SE SW, Section 11-13n-12e, is drilling at 1,000 feet.

Okmulgee County Completions

W. E. Holmes and others' No. 2 Riverbed, CNL NE SW, Section 11-17n-13e, was shot with 80 quarts from sand at 1,465-69 feet and made 20 bls. Devonian Oil Co.'s No. 7 Tiger, SW cor. NE SE, Section 24-16n-12e, shot with 40 quarts from Wilcox sand at 2,249-57 feet, made 25 bbls. W. O. Dickenson's No. 7 Cooper, NE cor. SW, Section 12-16n-13e, shut in for 6,000,000 feet of gas from sand at 1,486-89 feet. Burke-Gibbs Oil Co.'s No. 8 Mason, NE cor. SW NE, Section 16-16-14e, made 10 bbls. after a 40-quart shot from sand at 1,795-1,805 feet. The Texas Company's No. 1 Peters, NE cor. SW, Section 34-16n-14e, was dry at 2,350 feet. Shaffer Oil & Refining Co. has abandoned location for No. 7 Carlina, SE cor. SW SE, Section 17-15n-11e. Same company's No. 8 Williams, NW cor. NE NE, Section 20-15n-11e, was dry and abandoned at 3,060 feet. Devonian Oil & Independent Oil & Gas Co. have a dry hole in the Wilcox sand at 2,689-95 feet in No. 9 Fields, NE cor. SW SW, Section 7-15n-13e. Sidwell Drilling Co.'s No. 1 Lunsford, SW cor. NW SW, Section 4-14n-11e, had the Dutcher sand at 2,409-12 feet, made 60 bbls. J. H. Rebold's No. 4 McIntosh, SE cor. NW SE, Section 5-14n-11e, was dry and abandoned at 2,526 feet; No. 5, SW cor. NE SE, also was dry at 2,560 feet. Kingwood Oil Co. had a dry hole at 2,809 feet in No. 1 Reynolds, SW cor. NE SW, Section 11-14n-12e.

Becker & Hutchinson's No. 1 Ragen, SW cor. NW, Section 5-14n-13e, was dry and abandoned at 2,791 feet. J. L. Selby's No. 3 Foster, NW cor. SE NW, Section 25-14n-13e, shut in for 5,000,000 feet of gas from sand at 1,750-52 feet. Nebraska-Okla.'s No. 4-A Harris, CSL SE NE, Section 1-14n-14e, shot was with 30 quarts from sand at 1,027-37 feet, and made 10 bbls. Elm Oil Co.'s No. 7 Flint, CSL SW SE, Section 13-14n-14e, was shot with 60 quarts from sand at 1,017-22 feet, and made 40 bbls. T. B. Slick's No. 2 Colbert, SE cor. NW SE, Section 14-14n-14e, had sand at 1,686-1,726 feet, making 75 bbls. of oil and lots of water. Claude Smith's No. 1 Rentie, NE cor. SW SW, Section 18-14n-15e, was dry and abandoned at 1,669 feet. Sheldon Oil Co.'s No. 1 Foster, NW cor. SW NE, Section 3-13n-13e, was dry at 2,745 feet. Cal-Cul Oil Co.'s No. 1 Doyle, CNL SE SW, Section 15-13n-14e was shot with 40 quarts from sand at 1,926-27 feet and made 40 bbls. Simms Oil Co.'s No. 6 Dunn, SE cor. SE NE, Section 21-13n-14e, was dry and abandoned at 1,980 feet. Kingwood Oil Co. has a dry hole at 2,556 feet in No. 13 Doyle, NE cor. NE SE NW, Section 28-13n-14e. Cusack and others' No. 5 Wiley, CWL SW NE, Section 29-13n-14e, had

sand at 1,675-98 feet, and made 25 bbls.

New Work in Muskogee County

C. M. Bradley's No. 1 Timberlake, SE cor. NE, Section 2-14n-19e, is drilling at 200 feet. He is also moving in a machine for No. 1 Cumpton, SW cor. SE NW, Section 16-14n-19e.

Muskogee County Completions

Culp and others' No. 4 Vanderalice, SW cor. NE SE, Section 30-15n-15e was shot with 5 quarts from sand at 1,528-48 feet and made 150 bbls. R. H. Pierce's No. 3 McIntosh, CNL SW SW, Section 17-14n-17e, shot with 30 quarts from sand at 1,404-32 feet, made 10 bbls. Jolly-Ogg's No. 1 Cherry, CWL NE NW, Section 2-14n-18e, made 75 bbls. after a shot with 60 quarts from sand at 1,226-40 feet. C. M. Bradley's No. 1 Crittenden, CNL NW SW, Section 5-14n-19e had sand at 707-15 feet and made 120 bbls. the first 24 hours. Completed for 60 bbls.

New Work in Okfuskee County

Amerada Petroleum Corp. and Barnsdall Oil Co. are rigging up for No. 1 Ford, SE cor. NW, Section 18-13n-8e. Darby Petroleum and others are spudding No. 1 Manwarring, SW cor. NE SE, Section 17-13n-10e. Cromwell Oil & Gas Co.'s No. 1 Silla Deer, CEL SE SW, Section 8-12n-7e, is a rig. Independent Oil & Gas Co.'s No. 1 Cinda, SE cor. NW NE, Section 12-12n-10e, is drilling at 555 feet. Barnsdall is rigging up No. 5 Morgan, C SE NW SE. Section 3-12n-11e. C. L. McMahon is rigging up No. 2 Morgan, SE cor. SE, Section 3-12n-11e.

Okfuskee County Completions

Cooper & Donnelly's No. 1 Taylor, NW cor. NW, Section 7-13n-10e, dry and abandoned at 3,550 feet. Barnsdall Oil Corp.'s No. 3 Morgan, NE cor. SW SE, Section 3-12n-11e, had sand at 2,592-2,602 feet and made 300 bbls. the first 24 hours. Phillips Petroleum Co.'s No. 2 Randall, SW cor. NE NE, Section 10-12n-11e was dry and abandoned at 3,384 feet. Amerada Petroleum Corp.'s No. 5 Harjo, CWL NW NW, Section 13-12n-11e, had sand at 2,564-70 feet and made 70 bbls. Champlin Refining Co.'s No. 2 Henry, NE cor. SE NW, Section 15-12n-11e was dry and abandoned in the Wilcox sand at 3,595 feet. Gypsy Oil Co.'s No. 1 Harjo, NE cor. SE, Section 35-11n-9e was shot with 10 quarts from sand at 3,187-95 feet and made 56 bbls. Link Oil Co.'s No. 1 Stidham, C NW NW NW, Section 3-11n-10e, plugged and abandoned at 3,975 feet.

New Work in Seminole County

Prairie Oil & Gas Co.'s No. 4 Kincaid, SW cor. SE SE, Section 33-10n-6e, is a rig. Searight and others have rig on ground for No. 2 Youngblood, NE cor. SE, Section 33-10n-6e. Carter Oil Co.'s No. 4 Stewart, NE cor. NW SW, Section 34-10n-6e, is a rig. Mid-Continent Petroleum Corp.'s No. 2 Grayson, SW cor. Section 34-10n-6e, drilling at 800 feet and No. 3, NE cor. SW SW, is a location. Prairie Oil & Gas Co. has a rig on the ground for No. 1 Washburn, SW cor. NW, Section 34-10n-6e and No. 2, SE cor. SW NW, is a location. Wrightsman Petroleum Co.'s No. 1 Harjo, SW cor. Section 34-10n-6e, is drilling at 30 feet. Carter Oil Co. is cementing 12½ inch casing at 28 feet in No. 1 Noko, NW cor. SW NW, Section 31-10n-7e. Magnolia Petroleum Co.'s No. 2 Simpson, SE cor. NW SE, Section 10-9n-5e, is a location. The Texas Company is spudding No. 1 Johnson, NW cor. NE SE, Section 10-9n-5e. Carter Oil Co.'s No. 1 Frazier, NW cor. Section 3-9n-6e, is drilling at 445 feet. Gypsy Oil Co.'s No. 1 Gudjo, NE cor. SW NE, Section 4-9n-6e, is a location. Carter Oil Co.'s No. 2 Carter, NE cor. SE, Section 23-9n-6e, is a rig. Same company's No. 1 Grisso, SE cor. SW, same section, is drilling at 1,020 feet. Tidal-Osage Co.'s No. 1 Hull, NE cor. NW SE, Section 23-9n-6e is a rig, and it is spudding No. 2, SW cor. SE. Barnsdall Oil Corp. has rig on the ground for No. 5 Carter, SE cor. SW NW, Section 24-9n-6e. Carter Oil Co. is building rig for No. 3 Carter, SW cor. Section 24-9n-6e. Mid-Continent Petroleum Corp.'s No. 3 Tayeche, C SW SE SW, Section 24-9n-6e, is drilling at 35 feet. Tidal-Osage has rig on the ground for No. 2 Carter, NE cor. NW SW, Section 24-9n-6e. Magnolia Petroleum Co. has rig on the ground for No. 1 Franks, NW cor. SW SW, Section 25-9n-6e. Prairie Oil & Gas Co.'s No. 1 Bloss, NE cor. NW NW, Section 25-9n-6e, is drilling at 140 feet. Tidal-Osage Co.'s No. 2 Tayeche, NW cor. NE NW, Section 25-9n-6e, is drilling at 20 feet. Independent Oil & Gas Co. and Garland are digging cellar for No. 5 Fixico, NW cor. SE NE, Section 26-9n-6e and No. 6, SW cor. SE NE. Prairie Oil & Gas Co. is building rig for No. 1 Strothers, SE cor. Section 27-9n-6e. Barnsdall Oil Corp.'s No. 1 Shaw, NE cor. Section 34-9n-6e, drilling at 100 feet. Sinclair Oil & Gas Co.'s No. 1 Grissco, "A," C NE NE NW, Section 35-9n-6e, is drilling at 100 feet. Its No. 1 Grissco "B," C NW NW NW, same section, is drilling at 60 feet. T. B. Slick's No. 1 Fransk, NW cor. NE, Section 35-9n-6e, drilling at 100 feet. Superior Oil Co.'s No. 1 Grissco, NW cor. SE NW, Section 35-9n-6e is drilling at 100 feet.

Gypsy Oil Co. is rigging up No. 1 Frazee, SW cor. NE SW, Section 36-9n-6e. Gypsy Oil Co. and Phillips Petroleum Co.'s No. 1 Gus Island, C SW SW SE, Section 21-9n-7e, is drilling at 133 feet. Southwestern Petroleum Co.'s No. 5 Peters, SW cor. NE SE, Section 18-9n-8e, is a location.

Seminole County Completions

Carter Oil Co.'s No. 1 Stewart, SW cor. NW SW, Section 34-10n-6e, had sand at 4,089-4,102 feet, completed for 3,793 bbls. Sinclair Oil & Gas Co.'s No. 10 Yarbrough, C NE NE NE, Section 4-10n-8e, had sand at 1,868-1,880 feet, made 100 bbls. Magnolia Petroleum Co.'s No. 2 Parker, C SE SE SW, Section 32-8n-8e, had sand at 4,179-91 feet and made 1,642 bbls.

New Work in Hughes County

Independent Oil & Gas Co.'s No. 4 Davis, SW cor. NE, Section 26-9n-6e, is a location. Prairie Oil & Gas Co.'s No. 1-A McAllister, SW cor. NE, Section 1-8n-8e, is a location.

Hughes County Completions

Minnehoma Oil Co.'s No. 3 Cain, C SE SW NE, Section 1-9n-9e, plugged and abandoned at 3,406 feet. Magnolia Petroleum Co.'s No. 1 Meaders, C NW NW SW, Section 28-8n-9e, shut down at 2,130 feet. Amerada Petroleum Corp.'s No. 13 Frederick, CNL S half SE NW, Section 5-7n-8e, had sand at 4,163-75 feet, and made 230 bbls. on the swab. Dixie Oil Co.'s No. 6 Garner, C NE NW NE, Section 5-7n-8e, had sand at 4,183-97 feet, good for 1,600 bbls.

New Work in Caddo County

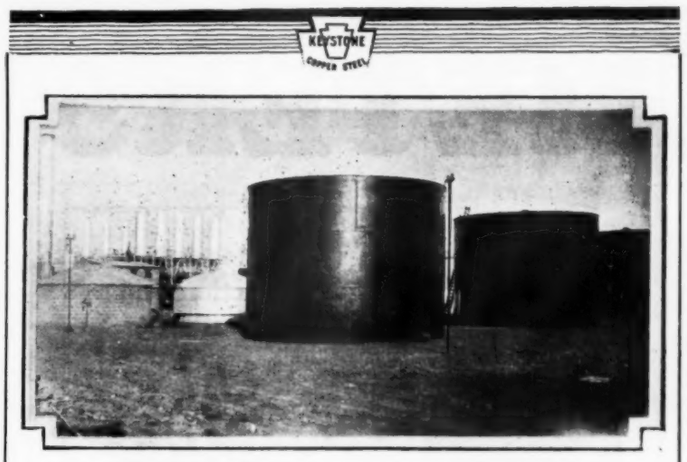
Gorton Trust's No. 1 Marchand, C SW NW, Section 2-5n-9w, is a rig. Livermore Oil Co.'s No. 2 Bighy, SE cor. SE NE, Section 10-5n-9w, is a rig. Flora-Okla Oil Co. is rigging up rotary for No. 4 Rigney, C SW NW, Section 12-5n-9w.

New Work in Grady County

Littlemack Oil Co.'s No. 5 Farwell, NW cor. SW, Section 26-5n-8w, is a location. Magnolia Petroleum Co.'s No. 3-A Rochold, SE cor. NW, Section 11-4n-8w, is a location. Amerada Petroleum Corp.'s No. 1 Gartlin, SE cor. SW, Section 6-3n-5w, is a location. Carter Oil Co. is rigging up No. 1 Miller, SW cor. Section 22-3n-5w. Magnolia Petroleum Co.'s No. 2 Polson, SE cor. SW SW, Section 27-3n-5w, is a location. Briscoe & Hall's No. 2 Nations, NE cor. NW SE, Section 34-3n-5w, is drilling at 200 feet. Garvin Drilling Co. is rigging up rotary for No. 1 Nations, NE cor. SE, Section 34-3n-5w. Joe Hivick's No. 1 Blythe, C NW NE SE, Section 13-7n-6w, is drilling at 400 feet. Humble Oil & Refining Co.'s No. 1 Cline, SW cor. SE, Section 27-6n-5w, is drilling at 50 feet.

Grady County Completions

Stogner and others' No. 3 Smith, C SW NE, Section 23-5n-8w, shut in for 8,000,000 feet of gas from sand at 2,056 to 2,330 feet. Carter Oil Co.'s No. 1 Hilderbrant, NE cor. SW NW, Section 35-3n-5w, had sand at 1,445-53 feet, and made 87 bbls. Gypsy Oil Co.'s No. 30



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Seay, CWL SE NW, Section 33-6n-5w, had sand at 1,328-29 feet, and made 28 bbls. Josey & Grifeth have abandoned rig for No. 1 Holly, SW cor. NE NE, Section 7-4n-8w.

New Work in Stephens County

Texhoma Oil Co.'s No. 1 Church Lot, SE cor. Section 26-2n-6w, is drilling at 500 feet. Carter Oil Co. is rigging up for No. 1 J. Graham, SW cor. NW NE, Section 2-2n-5w. Comanche Oil & Gas Co.'s No. 1 Wilson, NE cor. NW NE, Section 29-2n-7w, is drilling at 100 feet.

Stephens County Completions

Pauline Oil Co.'s No. 1 Gumm, NE cor. SW NE, Section 11-2n-9w, is dry and abandoned at 2,890 feet. Hawks & Ware have a dry hole at 763 feet in No. 2 Yates, C NW NW, Section 32-2n-7w.

New Work in Garvin County

Gypsy Oil Co.'s No. 3 Lyles, SE cor. SW NE, Section 3-2n-3w, is drilling at 206 feet. Wirt Franklin's No. 7 Carpenter, SE cor. NW SW, Section 22-2n-3w, is a rig. Magnolia Petroleum Co. is moving in timbers for No. 2 Morris, SE cor. NW NW, Section 22-2n-3w. Humble Oil & Refining Co.'s No. 3 Bumpass, NW cor. SE SE, Section 33-1n-3w, is a rig.

Garvin County Completions

Humble Oil & Refining Co.'s No. 1 Barnes CWL SW SE, Section 1-4n-3e, is dry and abandoned at 5,090 feet. Skelly Oil Co.'s No. 1 Smith, NW cor. NW SE, Section 3-2n-3w, had sand at 1,984-86 feet and made 200 bbls. Mid-Continent Petroleum Corp's No. 1 Lillie Carpenter, SW cor. SW SE, Section 15-2n-3w, was dry at 3,326 feet. C. R. Smith has a dry hole at 2,050 feet in No. 5 Fee, NW cor. NE NE, Section 27-2n-3w. Coline Oil Co.'s No. 8 Higgins, SW cor. NW, Section 8 2n-2w, is shut in for 2,000,000 feet of gas from sand at 2,454-68 feet. Gilmer Oil Co.'s No. 2 Sid Hernstadt, SE cor. SW SE, Section 34-1n-3w, had sand at 3,190-3,228 feet and swabbed 140 bbls. Completed for 40 bbls. Magnolia Petroleum Co.'s No. 6 McLish, NW cor. SE SW, Section 34-1n-3w, had the sand at 2,905-20 feet, good for 80 bbls. Its No. 7, SW cor. SE SW, had sand at 2,748-56 feet, and made 335 bbls.

GULF COAST FIELDS

(Continued from Page 53)

3 Welder is drilling below 2,080 feet and No. 4 is at 900 feet. The Gulf Production Co.'s No. 1 Beckman is around 875 feet. In the old field, east of the river, the Peer Oil Co.'s No. 1 Harrison is fishing. The Premium Oil Co.'s No. 1 Mitchell is idle.

Orange Pool

In the southeast section of the Orange Pool, the Sun Co.'s No. 2 Brown is working over at 4,500 feet. On the east side of Cow Bayou, the Kishi Development Co.'s No. 6 McGuire is shut down at 3,450 feet. The Gulf Co.'s No. 1 McGuire is working over at 3,455 feet. Along Cow Bayou, the Rycade Petroleum Co.'s No. 1-S state land is at 3,370 feet. In the older part of the pool, the Humble Oil & Refining Co.'s No. 27-B Chesson is bailing at 3,480 feet. The Texhoma Oil Co.'s No. 7 Chesson is doing the same at 3,400 feet, following a work over. No. 16 Chesson is cutting the liner at 4,600 feet. The Brownie Babbittee Oil Co.'s No. 3 McLean is at 3,475 feet. The Rex Petroleum Co.'s No. 2-B Carbello is drilling at 4,035 feet. The Orange Petroleum Co.'s No. 7 Chesson is rigging to work over.

Other Pools

The Texas Company has derricks up for No.'s 82 Hogg and 12 Abrams on the north side at West Columbia, the first new work it has started there in two years. The Hyde Production Co.'s No. 2 Masterson on the northeast side, is drilling around 1,565 feet.

At High Island in Galveston County, the Gulf Co.'s No. 5 Smith is idle. The Sun Co.'s No. 8 Cade is at 4,435 feet and No. 11 Cade is drilling at 2,170 feet.

The Humphrey Corporation is constantly spreading out and extending its activities in the Gulf Coast region. In addition to its Sour Lake work and at Barber Hill in connection with Mills Bennett Production Co., it has a rig for No. 1 West-Schenck on the south side of the Blue Ridge Dome. The Gulf Production Co. is drilling No. 6 West-Schenck there and No. 9 Luscher on the east flank at 650 feet. The Sinclair Oil & Gas Co.'s No. 2 Davidson is working over at 3,000 feet. The Gulf Co. is also working over No. 10 Blakely. The Navarro Oil Co. has a location for No. 1 Robinson on the west side.

At Batson The Texas Company abandoned No. 2 La Jarza on the east side at 2,060 feet. The Buchanan Oil Co.'s No. 90 Milhome bailed dry at 775 feet. The Paraffine Oil Co.'s No. 67 fee is bailing at 610 feet.

The Gulf Production Co.'s No. 1 Cruse is drilling around 2,600 feet and No. 63 Choate at 1,110 feet. The Buchanan Oil Co.'s No. 91 Milhome is rigging. The East Batson Oil Co.'s No. 9 Counzelaman is drilling at 435 feet. The Ada Belle Oil Co.'s No. 109 Texas is at 465 feet.

In the Saratoga Pool, the Rio Bravo Oil Co.'s No. 11 Jordit is drilling at 1,243 feet. No. 46-C fee is a derrick.

At Boling, The Texas Company's No. 2 Felder is drilling around 3,200 feet. No. 1 Farmer on the northeast flank is around 3,485 feet in sandy shale with no showing. The Sun Oil Co.'s No. 2 Farmer, on the same side of the dome is idle at 1,650 feet.

In the Edgerly (La.) Pool, the Edwards Oil Co. is rigging No. 4 Landry to work over. The Rex Petroleum Co.'s No. 2 Hunter is drilling below 3,780 feet.

Coastal Wildcats

The number of wildcat tests in the coastal region is diminishing, due to the increased operations at Spindletop, Sour Lake and Pierce Junction. As the tests are abandoned the rigs are moved to one of the above-named pools.

During the week, the Roxana Petroleum Co. abandoned No. 2 Allen Dome in the southern part of Brazoria County, at 4,776 feet in pyrites. That company has made locations for Nos. 1 State land, Allen Dome, 2 and 3. Around the Clements Dome, locations have been made for No. 1 State land, 1-A Clements and No. 1 Pabst. Both are new domes located by means of geophysical tests and around which several formation tests have been drilled.

The Houston Oil Co. quit No. 3 Sun-Dyson Big Hill Dome in Jefferson County at 3,005 feet. Big Hill is an old dome, around which exploration work dates back for 16 years. The Port Arthur Development Co. abandoned No. 3 West, near Westbury, at 2,290 feet and has made a location for No. 4 some 250 feet east of No. 3. At Fannette Dome, southwest of Beaumont, the Gulf Production Co.'s No. 2 Bordages is drilling around 4,670 feet in sand rock.

In Matagorda County, the Gulf Production Co. plugged No. 5 Craig on the Hawkins Dome after drilling into rock salt at 745 feet. A location has been made for No. 6 Craig 1,000 feet east from No. 1 Craig. Its No. 1 Parkinson there is drilling around 3,665 feet in sandy shale and lime. The Humble Oil & Refining Co. abandoned No. 1 Robins, near Van Vleck in the southeast part of the county, at 3,285 feet.

The Brownie Babbittee Oil Co. moved the rig off No. 1 Lake Shore Drive in Orange County.

Austin County: Valley Oil Co.'s No. 1 Thompson shut down.

Brazos County: J. A. Germany's No. 1 Vick, 2½ miles southwest of Bryan, rigging to start drilling.

Chambers County: Roxana Petroleum Co.'s No. 1 state land, Moss Bluff, drilling. Osage Oil Co., of Oklahoma, No. 1 state land, 6 miles south of Moss Bluff, rigging.

Fort Bend County: Long Point, Gulf Production Co.'s No. 15 Davis drilling around 2,050 feet and No. 16 Davis drilling at 454 feet. A location has been

made for No. 17 Davis. The Gulf Co. has two rigs running at Big Creek.

Harris County: Brain and others' No. 1, north of Spring, location. Kelly and others' No. 1 Lipper, near Aldine, shut down at 3,044 feet. Gwynn and others' No. 1 Cage, near Huffman, shut down at 1,310 feet.

Jackson County: Houston Oil Co.'s No. 1, near Inez, drilling around 2,400 feet.

Victoria County: Houston Oil Co.'s No. 1 Keeran, rigging.

Goliad County: Houston Oil Co.'s No. 1 Pettus shut down temporarily at 2,524 feet.

Wharton County: J. W. Rich and Humphrey Corporation joint No. 1 Malone, 5 miles west of Wharton, drilling around 1,635 feet in sandy shale.

Sabine County: Humble Oil & Refining Co.'s No. 1 Temple Lumber Co., drilling around 1,765 feet.

Angelina County: Humble Oil & Refining Co.'s No. 1 Henderson, drilling around 1,455 feet. Van Hatcher and others' No. 1 Kountz, drilling below 1,545 feet. Flanigan Drilling Co.'s No. 1 Montooth, at Lufkin, rigging up.

Washington County: The Pratt-Hewitt Co. has started a deep test in the Mill Creek district, 9 miles southwest of Brenham. It is on the Konieczy tract and will be drilled to 3,500 feet. C. A. DeWare, who is credited with the discovery of the Mill Creek section 22 years ago, is starting a deep test on the Lehmann and has a location on the Schurenburg. J. H. Konklin is drilling a shallow test on the Krener. The Ross Oil Co. has a location for No. 1 Pomykal. There are six wells in the district pumping a small amount of oil. In 1917 the Texas Company drilled a test to 4,200 feet and four years later another test went into rock salt in the Pomykal at 2,100 feet.

The production comes from a thin streak of pay in sand rock at from 250 to 400 feet and it is hoped to find thicker sands at lower depths.

HAYNESVILLE AND UNION COUNTY DEEP WILDCATS

(Continued from Page 50)

Murry and associates' No. 1 Southern Lumber Co., Section 7-15-11, is drilling in lime at 2,950 feet. Wingfield and associates' No. 1 Southern, Section 2-16-12, is drilling at 1,780 feet.

Calhoun County

Delmar Oil Co.'s No. 1 Guidor, Section 16-11-14, is drilling at 1,733 fee.

Clark County

E. O. Lovett and associates' No. 1 Arnold, Section 12-9-20, formerly Virgil Heath's No. 1, was abandoned at 829 feet. The test had a slight show of dead oil at that depth. Wheelen Oil Co.'s No. 1 Brown, Section 35-10-20, was dry and abandoned at 2,307 feet.

Drew County

McClintock & Goodka's No. 1 Olga, Section 35-13-5, is drilling at 2,650 feet.

Hempstead County

Frank S. Myers' No. 2 Nichols, Section 17-11-25w, is drilling at 2,245 feet.

Little River County

Greason and associates' No. 1 Waldrop, Section 4-13-31, is drilling in hard rock at 1,480 feet. Mellick Oil Co.'s No. 1 Hawkins, Section 10-11-31, is drilling in lime and shale at 1,870 feet.

Miller County

Gulf Refining Co.'s No. 1 Dorsey, Section 27-17-26, is drilling in hard blue lime at 2,601 feet. W. D. Nash and associates' No. 1 Priest, Section 26-14-27, is shut down at 3,015 feet waiting for a roller bit.

LOUISIANA

Bienville Parish

Woodley & Collins' No. 1 Thomas, Section 23-16-10, is drilling in sandy shale at 1,670 feet.

Bossier Parish

Woodley & Collins' No. 1 Antrim, Section 4-21-11, is drilling in sandy shale at 2,730 feet.

Caldwell Parish

Keisker & Simon are still trying to kill at 400 feet at No. 1 Merideth, Section 38-13-4e. The total depth of the hole is 1,410 feet, corrected depth.

Claiborne Parish

Gilliland Oil Co. and Ramsey's No. D-1 Taylor, Section 14-23-8, is being bailed at 4,515-30 feet. Gulf Refining Co.'s No. 1 Crichton, Section 35-19-8, is drilling lime at 2,308 feet. Shaw & Ruch's No. 1 King, Section 20-21-8, is drilling in gumbo at 1,462 feet. Triangle Drilling Co.'s No. 1 Keen, Section 7-19-5, is drilling hard lime at 4,570 feet.

DeSoto Parish

Peer Oil Corp.'s deep test in the old Naborton district, No. 1 Woolems, Section 23-13-13, was a failure. The test was abandoned in hard lime at 3,000 feet, steel line measurement. Graize & Hintze's No. 1 Tompkins, Section 27-14-13, is being rigged. Dixie Oil Co.'s No. 1 Jenkins, Section 9-12-11, is drilling in hard gray lime at 4,651 feet. Magnolia Petroleum Co.'s No. 1 Bond, Section 27-12-11, is drilling at 3,932 feet. Snapp and associates' No. 1 Flores, Section 27-11-11, is drilling in shale at 1,810 feet.

East Carroll Parish

T. A. Snell's No. 1 Abston Crump & Wynne, Section 24-19-12e, is drilling at 650 feet.

Grant Parish

Humble Oil & Refining Co.'s No. 1-A Edenborn, Section 30-9-2w, was dry and abandoned at 2,605 feet. Gulf Refining Co.'s No. 2 Swope, Section 17-9-1e, is drilling in blue gummy shale at 450 feet. Holmes and associates' No. 1 Holmes, Section 17-9-1e, cored brown shale at 1,617 feet, and have a derrick up for No. 2 Holmes, 200 feet north and east SW cor. SE SW, Section 17-9-1e. H. L. Hunt's No. 1 Matthews, Section 15-9-1e, is being rigged. J. J. Long and associates' No. 1 Calhoun, Section 4-7-4w, is drilling sand rock at 882 feet. The Texas Co.'s No. 1 Swope, Section 16-9-1e, is being bailed to test at 1,581 feet.

Jackson Parish

El Dorado Chief Oil Co.'s No. 1 Jones, Section 3-14-4w, set 6-inch casing at 600 feet to test 1 foot of sand. The sand tested salt water and the test is going ahead at 1,100 feet. Charles Ferguson's No. 1 Martin, Section 5-15-1e, is drilling at 2,050 feet. Grigsby & Co.'s No. 1 Adams, Section 23-17-4w, is shut down for orders at 1,438 feet. Louisiana Petroleum Corp.'s No. 1 Davis Theus, Section 20-16-3w, is drilling gumbo at 2,120 feet.

Lincoln Parish

Arkansas Fuel Oil Co.'s No. 1 Lincoln Lumber Co., Section 3-18-3w, topped the Nacatoch sand at 2,359 feet and is drilling in lime at 2,400 feet. Buckley & Palmer's No. 1 Davis, Section 12-20-3w, is drilling in lime at 2,550 feet.

Jackson Parish

Brothers and associates' No. 1 Cockfield, Section 78-7-5w, is drilling at 1,197 feet. Edwin J. Forrest's No. 2 Ayers, Section 3-13-7, is drilling in gumbo at 1,840 feet. J. B. Greer's No. 1 L. L. L. L. Co., Section 6-5-7w, is drilling at 2,000 feet. Humble's No. 1 Nona Roge, Section 85-7-6, is drilling at 925 feet. McCormick and associates' No. 1 Russell, Section 41-10-7, is a rig. Ohio Oil Co.'s No. 1 L. L. L. L. Co., Section 20-8-8w, is drilling rock at 905 feet. E. Self's No. 1 Fisher, Section 18-8-9w, is a rig. Weaver Brothers Lumber Co.'s No. 1 fee, Section 4-7-7, topped the Wilcox at 1,395 feet and is drilling at 1,395 feet.

Rapides Parish

F. Pacholik's No. 1 Voda, Section 12-4-1e, is drilling at 470 feet. Ten-inch casing was set at 100 feet at Seip and associates' No. 1 Ball, Section 41-4n-2w, and the test is drilling at 500 feet.

Red River Parish

Alden Oil Co.'s No. 1 Powell, Section 3-11-10, is shut down at 1,197 feet waiting for casing.

Richland Parish

Gulf Refining Co. has staked location for No. 1 England Co., 2,940 feet north and 250 feet west SE cor. Section 18-17-6e. Gulf company's No. 1 Ches-Wyman, Section 23-18-8e, is drilling shale at 2,120 feet. A rig is being moved in

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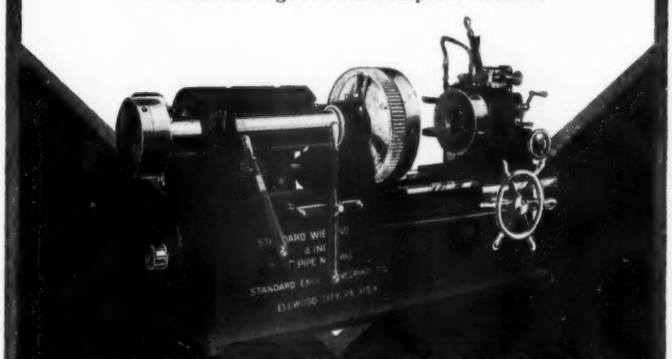

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Sabine Parish

A new derrick is being built for L. M. Emlet's No. 5 Bowman, Section 9-7-12. The old derrick was pulled in pulling on the drill stem at 4,070 feet. Emlet's No. 7 Bowman, Section 14-7-14, is shut down at 1,607 feet. Magnolia's No. 1 L. L. L. L. Co., Section 11-6-11, is drilling at 425 feet.

Tensas Parish

Spencer & Rhodes' No. 1 Somerset, Section 29-14-12, is drilling in shale at 2,460 feet.

Winn Parish

Humble Oil & Refining Co.'s No. 1-A C. Edenborn, Section 26-9-3w, is being rigged. Hyde & Nelson's No. 1 Louisiana Central, Section 16-13-1w, is a derrick pattern. A derrick is up for J. C. Long's No. 1 Milam, 200 feet south and west NE cor. NW NW, Section 28-13-3w. Ohio's No. 2 Edenborn, Section 4-12-1w, is drilling rock at 1,705 feet.

LaSalle Parish

Humble Oil & Refining Co.'s No. 3 L. & A., Section 25-11-3e, was dry and abandoned at 1,756 feet. Tunica Petroleum Co.'s No. 4-A L. & A., Section 15-9-3e, is drilling at 1,972 feet, and a derrick is up for No. 11-A L. & A., 300 feet north and west SE cor. Section 26-9-3e. Tunica's No. 12-A L. & A., Section 25-9-1e, is drilling at 50 feet.

FIRST REPORTS OF N. TEXAS OPERATIONS

(Continued from Page 42)

Patton, 213 feet north and 256 feet east SE cor. Section 65, Block 46, H. & T. C. Survey, and located in M. Whitley Survey, No. 1; No. 8, 315 feet north and 330 feet east NE cor. Section 20, Block Y, and located in M. Whitley Survey, No. 1; No. 9, 330 feet north and 990 feet west NE cor. Section 20, Block Y, and located in M. Whitley Survey, No. 1; No. 10, 935 feet north and 294 feet east SW cor. of their 271-acre lease out of M. Whitley Survey, No. 1; No. 11, 256 feet south and 568 feet east SE cor. Section 66, Block 46, H. & T. C. Survey, and located in M. Whitley Survey, No. 1. Phillips Petroleum Co. and Coble Oil Co.'s No. 20 J. A. Whittenberg, 330 feet south and west NE cor. S half NW, Section 12, Block Y. Phillips Petroleum Co.-Pulaski Oil Co.'s No. 7 H. E. Smith and others, 990 feet south and 330 feet east SW cor. NE, Section 12, Block Y. Premier Oil Co.'s No. 1 E. B. Jones, 330 feet south and east NW cor. Section 9, Block M-15, W. W. & S. Survey. Rock Island Oil Co.'s No. 1 W. A. Starnes, 330 feet north and west SE cor. Section 22, Block M-23, T. C. R. R. Survey. Skelly Oil Co.'s No. 8 Johnson Brothers, 330 feet south and 902 feet west NE cor. NW, Section 20; No. 9, 995 feet south and 330 feet west NE cor. NW, Section 20, Block Y; No. 10, 330 feet north and east SW cor. NW, Section 20, Block Y; No. 11, 330 feet north and 1,000 feet east SW cor. NW, Section 20, Block Y; No. 12, 330 feet north and 1,000 feet west SE cor. NW, Section 20, Block Y; No. 1 J. E. Pritchard (Breene), center west 20 acres, SE, Section 3, Block B-4, D. & S. E. Survey.

Carson County

Navajo Oil Co.'s No. 1 E. S. Palling, 990 feet north and 2,430 feet east SW cor. Section 22, Block Y-2, A. B. & M. Survey.

Gray County

Empire Gas & Fuel Co.'s No. 1 J. F. Benton, 330 feet north and east SW cor. Section 64, Block 3, I. & G. N. Survey. McMan Oil & Gas Co.'s No. 3 Worley & Reynolds, 990 feet south and 330 feet east NW cor. W half NE, Section 83, Block 3, I. & G. N. Survey. H. Reiley's No. 1 J. M. White, 310 feet north and west SE cor. Section 212, Block M-2, B. S. & F. Survey. The Texas Company's No. 3 A. Holmes, 1,322 feet north and 330 feet west SE cor. E half SE, Section 87, Block 3, I. & G. N. Survey.

Wichita County

Hothan & Cutcher's No. 1 Hiram Willis, 450 feet south and 150 feet east NW cor. east 24.7 acres, north 49.7 acres, east 99.7 acres, south 149.7 acres, Block 1, Red River Valley Lands. B. Lambert and others' No. 1 W. R. Brown, 1,150 feet north and 150 feet east, most southerly SW cor. B. B. B. & C. Survey, A-30. Simms Oil Co.'s No. 1 W. H. Chilson, 150 feet north and 544.1 feet SW cor. Section 3, League 4, Denton County school land, A-417. Archer Oil Co.'s No. 1 Kemp & Kemper, 150 feet south and 170 feet east NW cor. Block 19, Kemp's Wichita Valley Lands. R. R. Clark and others' No. 8 Ward & Todd, 150 feet north and 800 feet east SW cor. north 25 acres, Lot 13, Ward & Todd Subdivision, and in Section 6, F. C. & S. F. Survey, A-625. Clark, Waggoner & Hammond's No. 3 Ward & Todd, 450 feet north and 150 feet west SE cor. north 25 acres, Lot 12, Ward & Todd Subdivision, and in A. B. & M. Survey, No. 11, A-339. Kimmell & Dillard's No. 2 Fassett & Tuttle, 1,416 feet south and 1,250 feet east NW cor. D. L. & C. Survey, A-596. W. A. Patterson's No. 2 L. P. Douglas, 1,275 feet north and 450 feet east SW cor. Section 2, S. A. & M. G. Survey, A-675. G. R. Ridgeway's No. 1 Foster & Allen, 4,431 feet north and 1,761 feet east SW cor. Section 1, S. A. & M. G. Survey, A-273. T. M. Sessums and others' No. 1 M. A. Barwise, 150 feet north and east SW cor. north 80 acres, east 300 acres, south 600 acres, James Cole Survey, A-37. The Texas Company's No. 5 Ward & Todd, 522 feet north and 450 feet west SE cor. Lot 10, Ward & Todd Subdivision, and located in Richard Brown Survey, A-518; No. 6, 150 feet north and east SW cor. Lot 10, Ward & Todd Subdivision, and located in Richard Brown Survey, A-518. Texhoma Oil & Refining Co.'s No. 1 T. L. Burnett-O, 212 feet north and east SW cor. N half SW NE, Section 2, T. & N. O. Survey, A-506. W. C. Young's No. 1 W. J. Logan and others, 150 feet north and east SW cor. west 11.9 acres, north 98.515 acres, Block 34, Kemp's Wichita Valley Lands.

Wilbarger County

Empire Gas & Fuel Co.'s No. 51 W. H. Stephens, 490 feet south and 150 feet west NE cor. Section 83, Block 14, H. & T. C. Survey.

Baylor County

Pandem & Richards' No. 1 J. A. Young, 150 feet north and west SE cor. SW NW, Section 2,426, T. E. & L. Survey.

Archer County

American Refining Co. and others' No. 4 J. H. Turbeville, 150 feet south and west NE cor. SW, Robert Carson Survey, No. 146, A-96. P. Browning's No. 1 P. Browning, 450 feet north and 1,050 feet west SE cor. Section 78, L. P. Hunt Subdivision, and located in H. & T. C. Survey, 11, A-219. Marland Oil Co.'s No. 4 Mrs. J. H. Turbeville, 150 feet south and west most easterly NE cor. of their 80-acre lease, Robert Carson Survey, No. 172, A-106; No. 5, 1,010 feet south and 650 feet east NW cor. of their 80-acre lease out of Robert Carson Survey, No. 172, A-106; No. 6, 750 feet south and 150 feet east NW cor. of their 80-acre lease, Robert Carson Survey, No. 172, A-106. McCorty Oil Co.'s No. 4 L. F. Wilson-Dillday, 150 feet south and 450 feet west NE cor. Lot 401, and located in Lot 551, Geraldine Subdivision, G. H. & H. Survey, No. 1, A-160; No. 3 Wilson-McCrory "Luke", 150 feet south and west NE cor. Lot 8, Geraldine Subdivision, and located in J. T. Tucker Survey, A-1,113. Panhandle Refining Co.'s No. 2 W. B. White, 150 feet north and 1,388 feet east SW cor. W. B. White's 80-acre tract out of Section 19, League 3, Denton County school land, A-117. Simms Oil Co.'s No. 7 Mrs. J. H. Turbeville-A, 150 feet north and 920 feet west SE cor. of their 80-acre lease "A", Robert Carson Survey, No. 172, A-106. Simms Oil Co. and Consolidated Oil Co.'s No. 2, J. H. Turbeville, 450 feet south and 150 feet east NW cor. SE, Robert Carson Survey, No. 146, A-96. The Texas Company's No. 5 Mrs. J. H. Turbeville-C, 150 feet south and 1,134 feet east NW cor. of their 40-acre lease "C", out of Robert Carson Survey, No. 172, A-106; No. 6, 150 feet north and east SW cor. of their 40-acre

lease "C", Robert Carson Survey, No. 172, A-106. Texhoma Oil & Refining Co.'s No. 16 W. B. Hamilton, 1,006 feet north and 1,050 feet west SE cor. Section 22, League 4, Denton County school land, A-114; No. 3 Kemp & Kemper, 150 feet north and east SW cor. NE. Block 63, Kemp's Wichita Valley lands. Wanderer Oil Co. and Perkins & Cullum's No. 1 Mrs. J. H. Turbeville, 150 feet north and east SW cor. N half NW. Robert Carson Survey, No. 146, A-96.

Atlantic Oil Producing Co.'s No. 6 S. E. Oldham, 750 feet north and 450 feet west SE cor. of their 40-acre lease, out of E. Hubble Survey, A-1,128. Benton & Langford's No. 1 J. H. Robertson, 150 feet south and west NE cor. south 35 acres, north 150 acres, west 218 acres, John Dorsey Survey, A-122. Gates and others' No. 9 W. H. Thomas, 150 feet south and 450 feet west NE cor. of their 80-acre lease, N. Thomas Survey, A-454; No. 10, 1,500 feet south and 450 feet west NE cor. of their 80-acre lease, N. Thomas Survey, A-454. Bridwell & Heydrick's No. 1 Abercrombie & Taylor, 150 feet north and west SE cor. south 22 acres, east 90 acres, SW, Section 2, S. P. R. R. Survey, A-1,281. Grebin and others' No. 1 J. A. Young, 1,100 feet south and 500 feet west NE cor. Section 2,486, T. E. & L. Survey. A. W. Johnson's No. 1 J. R. Garvey, 900 feet north and 450 feet west SE cor. Section 1,855, T. E. & L. Survey. Magnolia Petroleum Co.'s No. 16, A. J. Lowe, 450 feet south and 150 feet west NE cor. Lot 2, Crawford Subdivision, I. Holmes Survey, A-162. Pagan and others' No. 1 L. L. Hudson, 450 feet south and 150 feet east NW cor. east 13 acres, north 93 acres, Section 80, Club Ranch Subdivision. Plains Producing Co.'s No. 4 R. O. Prideaux, 150 feet north and west SE cor. of their 42-acre lease, John Dorsey Survey, A-121. Schermerhorn Oil Co.'s No. 1 H. O. Prideaux, 150 feet north and 925 feet west SE cor. Lot 26, W. J. Fraley Subdivision, John Dorsey Survey, A-122.

Clay County

Lone Star Gas Co.'s No. 30 R. M. Waggoner, 800 feet south and 200 feet east NW cor. Section 60, Bacons Subdivision, W. Weddington Survey, A-998.

Montague County

Alexander-Lyles, Inc.'s No. 1 W. H. Yarborough estate, 330 feet south and 930 feet west NE cor. east 80 acres, W. H. Yarborough's 180-acre tract, J. W. Massie Survey, A-463. Consolidated Oil Co.'s No. 1 J. C. LaForce estate, 3,113 feet north and 2,135 feet east SW cor. J. C. LaForce estate, 348-acre tract, J. Short Survey, A-664. F. H. E. Oil Co. and others' No. 4 N. J. Howard and others-A, 1,639 feet north and 2,608 feet west SE cor. John Chambliss Survey, A-123. Farlan Oil Co.'s No. 3 J. W. Maddox, 971 feet south and 111 feet east NW cor. west 14 acres, Lot 5, C. W. Thompson Survey, A-741. Fleming & Kimbell's No. 5 R. Hinds-B, 300 feet south and 400 feet east NW cor. of their 20-acre lease "B", out of J. J. Wall Survey, A-1,199. Gracey-Kahle's No. 2 J. W. Maddox, 500 feet south and 200 feet west NE cor. of their 20-acre lease, J. W. Maddox's 191-acre tract, John Chambliss Survey. Harris & Simon's No. 3 J. W. Maddox, 200 feet north and east SW cor. of their 30-acre lease, J. W. Maddox's 191-acre tract, John Chambliss Survey, A-123. Haskell and others' No. 1 C. L. Rolls and others, 200 feet north and west SE cor. C. L. Rolls and others' 100-acre tract, John Chambliss Survey, A-123. Humble Oil & Refining Co.'s No. 7 J. W. Maddox, 513 feet south and 150 feet west NE cor. of their 80-acre lease, C. W. Thompson Survey, A-741. McElreath & Suggett and others' No. 1 M. G. McCracken, 150 feet south and west NE cor. north 56.75 acres, Section 56, Kaufman County School land, A-407. Pure Oil Co.'s No. 3 J. W. Maddox-C, 200 feet south and 539 feet east NW cor. Lot 4, C. W. Thompson Survey, A-741. The Texas Company's No. 2 N. J. Howard and others-B, 150 feet north and 544 feet east SW cor. of their 80-acre lease "B", John Chambliss Survey, A-123; No. 1 Mrs. M. H. Salmon-C, 1,772 feet south and 1,619 feet west NE cor. W. P. Zuber Survey, A-887.

Cooke County

Hooser Oil Co.'s No. 3 J. A. Dennis, 150 feet north and 1,259 feet west SE cor. east 160 acres, north half T. J. Moss Survey, A-736. J. K. Hughes Development Co.'s No. 1 A. Hyman, 150 feet south and east NW cor. L. Pickering Survey, A-839. C. C. Lanier's No. 3 A. Hyman, 450 feet south and 150 feet west NE cor. west 40 acres, north 80 acres, east 113 acres, south half T. J. Moss Survey, A-736. Roxana Petroleum Corp.'s No. 1 A. Hyman, 150 feet south and west NE cor. south 47.5 acres, west 95 acres, east 208 acres, south half T. J. Moss Survey, A-736.

Young County

Barnes and others' No. 2 W. F. Brown, 450 feet north and 150 feet west SE cor. north 80 acres, W. F. Brown's 97-acre tract, S. Tynes Survey, A-274; No. 3, 150 feet north and west SE cor. north 80 acres, W. F. Brown's 97-acre tract, S. Tynes Survey, A-274. Bloocworth & Kerbow's No. 1 S. L. Montgomery, 150 feet north and west SE cor. south 20 acres, NW 40 acres, S. L. Montgomery's 160-acre tract out of S. Tynes Survey, A-274. Bridwell & Mayfield's No. 2-A Allen Williams, 650 feet north and 640 feet east SW cor. Section 26, Young County school land, A-1,284. J. W. Collier's No. 2 J. W. Collier, 150 feet south and east NE cor. SW, Section 21, Young County school land, A-1,284; No. 3, 450 feet south and 150 feet east NW cor. SW, Section 21, Young County school land, A-1,284; No. 4, 150 feet south and 450 feet east NW cor. SW, Section 21, Young County school land, A-1,284. Godley Oil Co.'s No. 1 J. W. Jones, 800 feet north and 150 feet west SE cor. west 80 acres, J. W. Jones' 160-acre tract, S. Sallie Survey, A-252. Hivick and others' No. 1 H. O. Prideaux, 150 feet north and west SE cor. north 80 acres, NW, Section 2, C. T. R. R. Survey, A-2,288. Panhandle Refining Co.'s No. 1 R. O. Prideaux, 150 feet north and east SW cor. McMullen Survey, A-198. Reed and others' No. 6 J. W. Jack, 150 feet south and west NE cor. SW, Section 23, Young County school land, A-1,284. Robert Oil Co.'s No. 13 E. Rogers, 1,800 feet north and 3,000 feet west SE cor. Section 166, T. E. & L. Survey; No. 14, 450 feet north and 150 feet east SW cor. south 100 acres, north 200 acres, Section 166, T. E. & L. Survey. Ruff and others' No. 3 Graham Stewart, 1,890 feet south and 2,100 feet west NE cor. D. Dawson Survey, A-76. Atkinson & Sandefer's No. 3 H. M. Ford, 5,525 feet north and 155 feet east SW cor. W. T. Cater Survey, A-62, being 150 feet north and 155 feet east SW cor. of their 22-acre lease. Hemphill and others' No. 9 M. V. Keller, 550 feet south and 650 feet west NE cor. east 50 acres, south 100 acres, Section 1,103, T. E. & L. Survey. Jacob Oil & Gas Co.'s No. 1 I. H. Hatfield, 400 feet north and 502 feet west SE cor. NW 40 acres R. M. Kutch Survey, A-169. Pitzer & West's No. 5 J. W. Burgess, 710 feet south and 550 feet east NW cor. Clark Smith Survey, A-1,634.

Throckmorton County

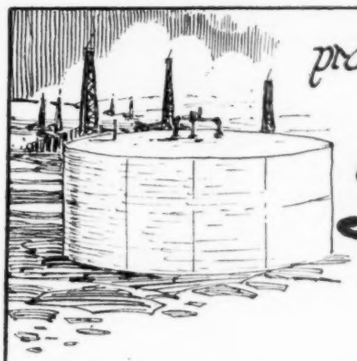
Humble Oil & Refining Co.'s No. 1 M. K. Graham, 466 feet south and west NE cor. NW, Section 992, T. E. & L. Survey. Reiter-Foster Oil Corp.'s No. 1 M. K. Graham, 466 feet south and west NE cor. NW, Section 985, T. E. & L. Survey. McGuire and others' No. 1 D. Keichen, 200 feet north of the most northerly NW cor. Section 1, and located in Section 3, Comanche Indian Reserve.

Jones County

Gillette & Hickey's No. 1 S. W. King, 250 feet north and 2,250 feet west SE cor. Manuel Buene Survey, No. 197. Muse-Robertson's No. 1 Manley, 660 feet north and 1,320 feet east SW cor. Section 35, Block 14, T. & P. R. R. Co. Survey.

Shackelford County

Domestic Oil Co.'s No. 1 William Poindexter, 150 feet south and east NW cor. SE, Section 45, Blind Asylum lands. J. P. Harris' No. 1 J. B. Matthews, 750



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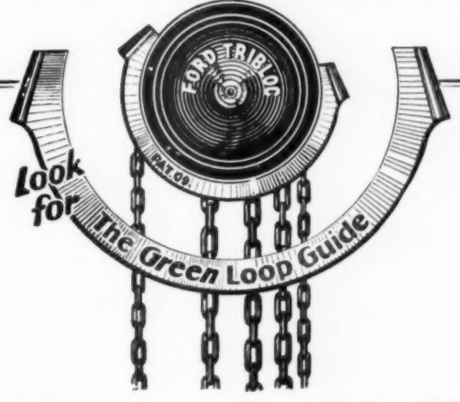

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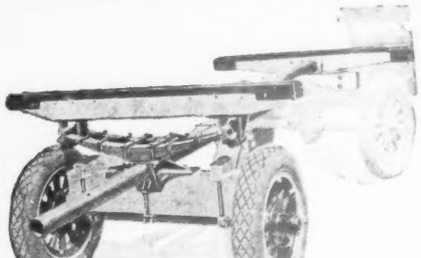

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feet north and 450 feet east SW cor. NW, Section 57, Block 10, E. T. R. R. Survey. Independent Oil & Gas Co.'s No. 2 W. Y. and R. A. Davis, 150 feet south and east NW cor. E half SE, Section 13, Block 12, T. & P. Survey. Magnolia Petroleum Co.'s No. 1 Mrs. B. A. King, 250 feet north and east SW cor. E half SW, Section 210, Block 10, E. T. R. R. Survey. M. H. Overlees' No. 3 J. B. Matthews, 633 feet southeast of the north line and 933 feet southwest of the northeast line, Section 584, T. E. & L. Survey. Roeser & Pendleton's No. 1 W. I. Cook-A, 150 feet south and west NE cor. NW SW, Section 60, Block 10, E. T. R. R. Survey; No. 24, 750 feet north and 150 feet west SE cor. NE SW, Section 84, Block 10, E. T. R. R. Survey; No. 26, 150 feet north and 1,050 feet west SE cor. NE SW, Section 84, Block 10, E. T. R. R. Survey; No. 27, 750 feet north and 150 feet east SW cor. NW SE, Section 84, Block 10, E. T. R. R. Survey; No. 28, 150 feet north and east SE cor. NE SE, Section 84, Block 10, E. T. R. R. Survey; No. 10 W. I. Cook-B, C SW SE SE, Section 84, Block 10, E. T. R. R. Survey; No. 11, C SE SE SE, Section 84, Block 10, E. T. R. R. Survey; No. 18, C SE NE NE, Section 85, Block 10, E. T. R. R. Survey.

Stephens County

Mook-Texas Co.'s No. 1 Jennie Bruce, 150 feet south and west NE cor. north 60 acres SE Section 51, Block 6, T. & P. Survey. Texas Fidelity Oil Corp.'s No. 1 D. C. Pratt, 900 feet south and east NW cor. Section 69, Block 6, T. & P. Survey. Texas & Pacific Coal & Oil Co.'s No. 67 Charles Binney, 3,230 feet north and 350 feet west SE cor. Section 53, Block 4, T. & P. Survey.

Eastland County

Amyx and others' No. 3 C. U. Connellee, 1,620 feet south and 300 feet west NE cor. F. Foster Survey, No. 22.

Callahan County

Brown & Co.'s No. 4 M. L. Long, 240 feet north and 500 feet west SE cor. S half M. L. Long's 37.5-acre tract, W. C. Anderson Survey. Prairie Oil & Gas Co.'s No. 2 J. C. Baum, 150 feet north and east SW cor. east 25 acres J. C. Baum 101-acre tract, Section 90, Comal County School Land; No. 6 R. Cunningham, 150 feet south and 450 feet east NW cor. N half Section 83, Comal County School Land; No. 7, 150 feet north and 750 feet west SE cor. N half Section 73, Comal County School Land.

Mitchell County

The California Co.'s No. 4 C. M. Adams, Lease 2, 1,650 feet north and 2,295 feet east SW cor. Section 11, Township 1-north, Block 28, T. & P. Survey. Llano Oil Co.'s No. 1 W. F. Scarborough, center Section 1, Block C-22.

Brown County

Amerada Petroleum Corp.'s No. 2 M. E. Fry, 2,050 feet north and 1,421 feet west SE cor. M. E. Fry 321-acre tract Jesse Chaudoin Survey, No. 621. L. G. Brodstreet's No. 1 W. A. Stout, 450 feet north and 150 feet est SW cor. Lot 2, W. B. Smith Survey, No. 155. Cranfill & Reynolds' No. 1 J. R. Gibson, 800 feet south and 400 feet east NW cor. Lot 26, H. Crocheron Survey, No. 656. R. G. Gillespie's No. 7 J. P. Newton, 681 feet south and 150 feet west NE cor. J. P. Newton 322-acre tract William L. Swain Survey, No. 145. Humble Oil & Refining Co.'s No. 3 M. E. Fry, 2,552 feet north and 910 feet west SE cor. M. E. Fry 321-acre tract Jesse Chaudoin Survey, No. 621; No. 4, 2,202 feet north and 150 feet west SE cor. M. E. Fry 321-acre tract Jesse Caudoin Survey, No. 621; No. 7 J. T. Hodnett, 200 feet north and 600 feet east SW cor. J. T. Hodnett 400-acre tract Mrs. J. M. Harris Survey, No. 784. Joines & Neiswanger's No. 1 J. W. Tober, 270 feet NW SE line 640 feet NE SW line J. W. Tober 640-acre tract David F. Brown Survey, No. 56. Maer & Staniforth's No. 1 J. B. Turner, 450 feet south and 150 feet west most northerly NE cor. J. R. Turner 451-acre tract A. B. Culbertson Survey, No. 14. G. P. Mitcham's No. 1 J. M. Perry, 150 feet south and east NW cor. J. M. Perry 15-acre tract Roland Honeycutt Survey, No. 623. McLester Oil Co.'s No. 10 W. M. Wooldridge, 150 feet south and 750 feet west SE cor. P. O. & G. Co. 60-acre lease and located on McLester Oil Co.'s 90-acre lease out of E. T. R. R. Survey, No. 151. Sinclair Oil & Gas Co.'s No. 1 J. W. Shore, 150 feet north and west SE cor. N half S half J. W. Shore 320-acre tract J. C. Ryan Survey, No. 635. Superior Oil Co. and others' No. 1 P. A. Brooks, 825 feet north and 300 feet west most easterly SE cor. P. A. Brooks 366-acre tract Jose Padilla Survey, No. 645. Union Oil Co.'s No. 1 Roy Hickman, 150 feet north and west SE cor. F. M. Kinsey Survey, A-1,786. C. O. Moore and others' No. 1 C. Thigpen, 450 feet south and 150 feet east NW cor. Section 26, H. T. & B. Survey, A-1,922. Wilhauson and others' No. 1 Bourn Brothers, 1,350 feet SE NW line, 750 feet NE SW line, Lot 10, Herman Reed Survey, No. 131. Womack & Loofborrow's No. 1 J. S. Funderburk, 450 feet south and 150 feet east NW cor. J. S. Funderburk, 117-acre tract Jacob Duckworth Survey, No. 250.

McCulloch County

Van Bibber and others' No. 1 B. G. Floyd-Smith, 100 feet north and 600 feet west SE cor. Phillips Jung Survey, No. 1,162; No. 1 A. G. Roberts, 1,420 feet south and 260 feet west NE cor. A. G. Mitchell Survey, No. 102; No. 2, 200 feet north and west SE cor. Section 140, H. & T. C. Survey.

Tom Green County

Texon Oil & Land Co. and Marland Oil Co.'s No. 1 Sorrell, 5,146 feet SW NE line, 997 feet NW SE line Christian Mann Survey, No. 265.

Reagan County

C. W. Cope and others' No. 1 L. H. White, center NE Section 8, E. L. & R. R. R. Survey. Roxana Petroleum Corp.'s No. 1 F. B. Boyd, 150 feet south and west NE cor. SW Section 15, C. & M. R. R. Survey, Block F.

Upton County

Dixie Oil Co.'s No. 7 E. S. Hughes, 2,212 feet SE NW cor. 330 feet NE SW line William Teer Survey, No. 4, A-806. Humble Oil & Refining Co.'s No. 3 A. S. Burleson, 330 feet north and 870 feet west SE cor. its 160-acre lease T. C. Jones Survey, No. 100, A-746; No. 4, 330 feet north and 870 feet east SW cor. its 160-acre lease T. C. Jones Survey; No. 100, A-746. Marland Oil Co.'s No. 26 A. S. Burleson, 911 feet south and 2,320 feet west NE cor. its 480-acre lease T. C. Jones Survey, No. 100, A-746; No. 27, 911 feet south and 2,970 feet west NE cor. its 480-acre lease T. C. Jones Survey, No. 100, A-746; No. 28, 330 feet south and 3,166 feet west NE cor. its 480-acre lease T. C. Jones Survey, No. 100, A-746; No. 14 Sanger Brothers, 1,471 feet SE SW cor. Section 18, Block 3, M. K. & T. Survey and 330 feet SW SW line T. C. Jones Survey, No. 100, A-746, and located in J. H. King Survey, No. 1, A-1,033; No. 15, 330 feet NW north cor. Mrs. E. C. Grooms Survey, No. 8, A-790, and 330 feet NE NE line Mary S. Denton Survey, No. 7, A-789, and located in H. H. King Survey, No. 1, A-1,033. Roxana Petroleum Corp.'s No. 3 Della Bowen, 1,818 feet south and 330 feet east NW cor. Section 6, G. C. & S. F. Survey, A-1,057. The Texas Company's No. 8 R. King, 330 feet north and east SW cor. Section 11, Block 3½ C. C. S. D. & R. G. N. G. R. R. Co. Survey; No. 9, 330 feet north and 2,231 feet east SW cor. Section 11, Block 3½, C. C. S. D. & R. G. N. G. R. R. Co. Survey.

Crane County

Marland Oil Co.'s No. 3 E. S. Hughes-C, 990 feet south and 330 feet west NE cor. Section 86, Block X, C. C. S. D. & R. G. N. G. R. R. Co. Survey; The Texas Company's No 5 R. King, 330 feet north and east SW cor. Section 85, Block X, C. C. S. D. & R. G. N. G. R. R. Co. Survey; No. 6, 330 feet north and west SE cor. W half SE Section 85, Block X, C. C. S. D. & R. G. N. G. R. R. Co. Survey; No. 7, 330 feet north and east SW cor. E half SE Section 85, Block

X, C. C. S. D. & R. G. N. G. R. R. Co. Survey.

Cockrell County

Humble Oil & Refining Co.'s No. 1 L. P. Powell-B, 165 feet north and east SW cor. E half Section 63, Block BB, G. C. & S. F. Survey.

SOUTHWEST TEXAS

(Continued from Page 46)

spudded in and are drilling. On Block 9, Shankle-Kori in No. 1 Weil are drilling at 1,200 feet. Simms Oil Co. on the Simms tract, is rigging up for No. 13 Palacious. On Block 6 Magnolia Petroleum Co. has spudded in and is drilling at 700 feet in No. 10 de la Garza, and rigging up for No. 11 de la Garza.

Jim Hogg-Henne, Winch & Fariss Pool

Magnolia Petroleum Co. on Survey 276 in No. 13 Killam-Martinez is drilling at 265 feet. Humble Oil & Refining Co. is moving on Block 5 to drill the No. 1 Vela.

Jim-Hogg-Kitselman & St. Albans

North of the Henne, Winch & Fariss Pool in the Kitselman & St. Albans Field on Block 20, Associated Oil Co. in the No. 1 Lopez is drilling at 1,640 feet. On Block 30 Kitselman & St. Albans have temporarily abandoned their No. 40 Holbein at 3,191 feet, and on Block 9 are drilling at 1,800 feet in No. 45 Holbein. On Block 13 they are drilling at 1,200 feet in No. 46 Holbein, and on Block 6 have derrick up for No. 47 and made location for No. 48 on Block 5.

Duval-Cole Gas Field

Morgan and others in the 40-acre tract in Survey 323 is moving on for No. 2 King-Harper and has made location 150 feet from northwest line and 150 feet from the southwest line for No. 3. O. W. Killam in his No. 5 Lopez, Survey 319, Block 8, has spudded in. Cole Petroleum Co. has made location for No. 10 Benavides on Block 13, Survey 11, 155 feet from the northwest line and 155 feet from the northeast line. In its No. 25 Benavides on Block 1 it is drilling at 3,768 feet.

Duval-Piedras Pintas

Humble Oil & Refining Co.'s No. 6 Walsh in the Piedras Pintas salt dome which is the first well to reach production since the company brought in the discovery well some eight months ago and has been standing with the hole nearly full of oil, has now been placed on the pump, though no report has been received on the production. Some delay in placing on the pump resulted from various breakdowns in machinery.

N. LOUISIANA-ARKANSAS

(Continued from Page 50)

at 2,208 feet; six-inch casing was cemented at 2,150 feet at No. 249; four joints of the drill stem are being side tracked at 2,314 feet at No. 250 and six-inch was cemented at 2,150 feet at No. 251 and derricks are up for No. 252 to 257. Gulf Co.'s No. U-7 L. B. is drilling in at 2,154 feet. A derrick is up for Lewis Oil Corp.'s No. 8 Vespy, 450 feet west and 150 feet north SE cor. Section 15-21-15. Ohio Oil Co.'s No. 21 Smith, Section 12-21-15, is drilling at 1,145 feet. Ramsey and associates' No. 1 Muslow, Section 32-21-15, tested dry in chalk rock at 1,007 feet and arrangements are being made to abandon the test. Radio Oil Co.'s No. 3 Louisiana Oil Co., fee, Section 31-21-15, formerly Richardson Oil Co.'s No. 3, is drilling at 200 feet. Six-inch casing was cemented at 1,812 feet at The Texas Company's No. 64 Caddo L. B., Section 33-21-16 and B-1 in Section 22-15-12 is drilling at 790 feet. The Texas Company's No. 40 C. M. L. Co., Section 23-21-15, is drilling in chalk rock at 1,646 feet. Same company's No. 54 Harrell, Section 4-21-16, is drilling sandy shale at 2,386 feet. Six-inch casing was cemented at 2,255 feet at No. 12 Russell, Section 3-20-16. Thomason and associates' No. 2 Muslow fee, Section 31-21-15, is drilling at 500 feet. Unity Petroleum Co.'s No. 1 fee, Section 13-21-16, is waiting for a standard rig at 1,055 feet and 4½ inch casing was cemented at 1,922 feet. At No. 2 Victor Wenzell's No. 1 Thomas, Section 15-20-15, was dry in sand rock at 1,830 feet and is drilling ahead at 1,834 feet. His No. 1 Wemple, Section 14-20-15, was dry in sand rock at 1,849 feet and is drilling at 1,853 feet.

Searching for the Trinity Dixie Oil Co.'s No. 1 Jolly, Section 27-22-15, is drilling in broken lime and shale at 4,292 feet. Gulf's No. 1 Byrd, Section 2-19-14, is drilling in hard gray lime at 3,708 feet. Magnolia Petroleum Co.'s No. 16 Dillon, Section 24-21-15, is drilling lime and shale at 3,571 feet and No. 17 is shut down waiting for six-inch casing to set at 3,582 feet. Magnolia Co.'s No. 10 Robertshaw, Section 23-21-15, is shut down for orders at 3,610 feet. Magnolia Co.'s No. 1 Bradford, Section 24-21-15, is drilling lime and shale at 3,800 feet. The Texas Company's No. 42 C. M. L. Co., Section 23-21-15, tested salt water with a show of oil and gas at 3,729 feet. Four and one-half inch casing set at 3,703 feet is being pulled.

Bossier Parish

Gulf Refining Co.'s No. A-21 Bliss and Wetherbee, Section 15-19-11 is drilling in shale at 325 feet. George W. Wetherbee's No. A-13 Fee, Section 15-19-11, is drilling in sand at 388 feet. Wetherbee's No. A-14 fee, is shut down at 396 feet waiting for cable tools to drill in.

Monroe District

Two gas wells with a combined production of 8,000,000 feet of gas, were completed in the Monroe Field last week. Natural Gas Products Co.'s No. 7 Tensas Delta, Section 2-21-4e, was finished at 2,200 feet and gauged 5,500,000 feet of gas. R. J. O'Brien's No. 2 Ray and Green, Section 35-9-4e, was completed at 2,207 feet as a 2,500,000-foot well.

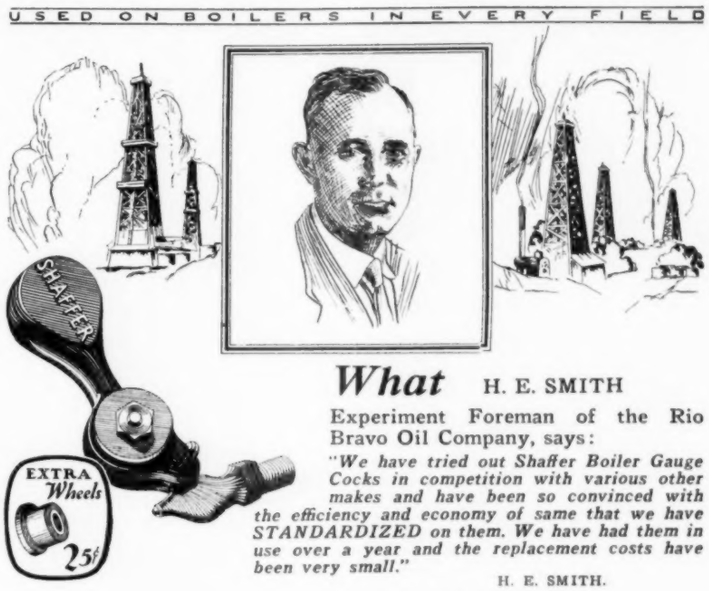
Casing set at 2,107 feet is being bailed at Feazel's No. 1 Archer, Section 22-20-4e. A rig is up for Natural Gas Products Co.'s No. 8 Tensas Delta, 1,320 feet north and west SE cor. Section 33-22-4e. Standard Oil Co.'s No. 1 Interstate, Section 34-21-8e, is drilling in hard sand at 1,137 feet. Eight-inch casing was cemented at 887 feet at United Carbon Co.'s No. 1 Clarke, Section 26-20-5e. Central Co.'s No. 1 Kerr, Section 12-19-4e, is drilling at 400 feet. Gulf Refining Co. lost the hole at 690 feet at No. 1 West Virginia, Section 17-17-5e, and is rigging up for the second hole, 300 feet north and west SE cor. NE.

Eight-inch casing was cemented at 898 feet at Hatcher & Evans' No. 3 fee, Section 17-19-4e. Ladell and associates' No. 34 fee, Section 6-19-5e, is drilling at 400 feet. Eight-inch casing was cemented at 948 feet at Maurey Drilling Co.'s No. 4 McErwin, Section 20-19-4e. Ouachita Gas Co.'s No. 2 D'Arbone, Section 25-19-2e, is drilling at 2,200 feet; No. 6 Smith, Section 37-20-4e, was erroneously reported drilling and is a location. Same company's No. 7 Allison, Section 37-21-4e, is drilling at 841 feet. Six-inch casing was cemented at 2,125 feet at Palmer Corp.'s No. 3 Cole, Section 43-19-4e, and No. 1 Lynch, Section 18-19-5e, is drilling at 1,520 feet. United Carbon Co.'s No. 1 Patton, Section 10-20-4e, is drilling at 810 feet. Arkansas Fuel Oil Co.'s No. 1 Reeves, Section 14-20-1e, is drilling in black shale at 4,370 feet. R. W. Rhodes' No. 1 Pickens, Section 22-22-2w, is shut down at 2,020 feet. Six-inch casing was cemented at 2,115 feet at Ruston Drilling Co.'s No. 1 Mayfield, Section 30-20-4e.

Webster Parish

Belchic & Laskey's No. 1 Pickett, Section 30-23-9e, is drilling at 2,400 feet. Humble Oil & Refining Co. is milling on collapsed 10-inch casing set at 2,793 feet at No. 2 Cox, Section 22-21-10. The total depth of the hole is 3,959 feet. Six-inch casing was cemented at 2,550 feet at Magnolia's No. 3 Tiner, Section 21-21-10, and No. 3-A Turner is a rig. A derrick is up for Magnolia's No. 1 Lewis, 600 feet south and west NE cor. SE. Section 25-23-10. The drill stem stuck at 4,026 feet at R. W. Norton's No. 1 Josey & Massey, Section 27-21-10. Ohio Oil Co. did not abandon the derrick for No. 4 Bank of Cotton Valley, Section 22-

USED ON BOILERS IN EVERY FIELD



What H. E. SMITH
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21-10, and rigging up for a deep test. The drill stem stuck at 4,600 feet at Ohio Oil Co.'s No. 1 Cox, Section 23-21-10; total depth of the hole is 5,957 feet. Palmer Corp.'s No. 1 Crichton, Section 30-20-8, is drilling in shale at 2,213 feet. Smitherman & McDonald's No. 1 Oakley, Section 29-23-11, is waiting for 4½-inch casing to set at 4,650 feet. The drill stem is being fished from 4,620 feet at Southern Crude Oil Purchasing Co. and Ramsey's No. 1 Munn, Section 1-22-10.

COMPLETIONS OF WEEK IN NORTH AND WEST TEXAS

(Continued from Page 40)

32 feet and was being put on the pump. So was No. 3, which swabbed 100 bbls. in 12 hours at 1,505-28 feet. Mid-Kansas Oil & Gas Co.'s No. 2 Andrews was dry and abandoned at 1,550 feet. McCarty Oil Co.'s No. 2 Parrish Brothers was also dry and plugged at 1,613 feet; No. 2 Luke Wilson had broken oil sand at 1,597-1,602 feet, good for 60 bbls.; No. 3 made 40 bbls. at 1,584-92 feet. McGregor and others' No. 13 Ford had salt water sand at 568-94 feet and was plugged at 600 feet. Panhandle Oil & Refining Co.'s No. 2 White was a duster at 1,782 feet. Simms Oil Co.'s No. 5 Turbeville made 215 bbls. at 1,516-38 feet; No. 6 swabbed 450 bbls. in the first 9 hours at 1,516-38 feet adn 700 bbls. in the next 12 hours. The Texas Company's No. 2 Turbeville-C made 245 bbls. at 1,509-30 feet; No. 3 made 205 bbls. at 1,507-29 feet.

In the south half of the county, Atlantic Oil Producing Co.'s No. 6 Oldham pumped 10 bbls. at 1,048-57 feet. Bridwell & Heydrick's No. 1 Abercrombie & Taylor was preparing to pump sand at 1,063-77 feet, estimated good for 10 bbls. Gates and others' No. 9 Thomas made 25 bbls. at 1,170-80 feet; No. 10 pumped 75 bbls. at 1,135-67 feet. Magnolia Petroleum Co.'s No. 15 Lowe pumped 37 bbls. at 1,259½-63 feet, after swabbing 50 bbls.; No. 24 swabbed 17 bbls. at 1,267-69 feet; No. 13 Cowden Portwood was dry and abandoned at 2,085 feet. Marland Oil Co.'s No. 3 Thomas-B made 74 bbls. at 1,164-78 feet. Pandem Oil Corp.'s No. 7 Thomas swabbed 11 bbls. in 5 hours at 1,157-65 feet and was preparing to pump. Roxana Petroleum Corp.'s No. 4 Abercrombie & Taylor swabbed 40 bbls. in the first 6 hours at 1,331-54 feet and was being put on the pump; No. 5 Kreeger swabbed 178 bbls. at 1,426-33 feet; the location for No. 1 Lester was abandoned. Simms Oil Co. and Burns' No. 2 Turbeville was dry and abandoned at 1,103 feet. Texhoma Oil & Refining Co.'s No. 2 Thomas was also a duster at 1,405 feet.

Brown County

J. S. Cosden's No. 4 Williams made 100 bbls. at 1,130-44 feet; No. 4-A Willaims made 75 bbls. at 1,186-97 feet, total depth 1,202 feet; No. 10-A was shot with 20 quarts at 1,194-1,204 feet and made 50 bbls. Curry & Moore's No. 2 Pickett flowed 240 bbls. at 1,260-88 feet; No. 3 Wooldridge was shot with 40 quarts at 1,228-69 feet and flowed 480 bbls. Eastland Oil Co.'s No. 1 Reynolds was dry and abandoned at 2,335 feet. Gunn Production Co.'s No. 9 Gunn had sands at 1,166-85 and 1,199-1,206 feet, good for 20 bbls. H. W. Drilling Co.'s No. 8 Prater was shot with 20 quarts at 1,301-18 feet and made 20 bbls.

Humble Oil & Refining Co.'s No. 1 Armstrong made 85 bbls. at 1,190-1,201 feet; No. 4 Foster made 200 bbls. at 1,165-90 feet; No. 12-B E. P. and W. H. Kilgore flowed 150 bbls. at 1,168-91 feet; No. 14-B flowed 100 bbls. at 1,164-85 feet; No. 15-B had a show of oil at 1,168-94 feet but was not completed; No. 9-B J. C. Kilgore also had a show of oil at 1,167-80 feet and wasn't completed; No. 1 Wooldridge was shot with 20 quarts at 1,234-64 feet and made 112 bbls.

Louisiana Oil & Refining Co.'s No. 4 Henslee made 6 bbls. at 1,268-80 feet, total depth 1,330 feet. McKanna's No. 4 Foster made 200 bbls. at 1,164-89 feet. McLester Oil Co.'s No. 7 Josie Wooldridge made 200 bbls. at 1,140-60 feet; No. 9 W. M. Wooldridge made 50 bbls. at 1,243-72 feet. McMan Oil & Gas Co.'s No. 1 Gaines made 2 bbls. at 1,321-44 feet, total depth 1,351 feet. Prairie Oil & Gas Co.'s No. 2 Pickett was shot with 17 quarts at 1,158-73 feet and with 2½ quarts at 1,193-1,203 feet and total depth at 1,212 feet made 25 bbls.; No. 1 Turner was dry and plugged at 3,270 feet. The Texas Company's No. 1 Gaines was shot with 5 quarts at 1,317-24 feet, total depth 1,341 feet and made 15 bbls.; No. 1 Stout was completed for 2,000,000 feet of gas at 1,163-78 feet, total depth 1,218 feet. West and H-Y Oil Co.'s No. 12 Newton was shot with 40 quarts at 1,-177-1,200 feet and made 20 bbls.; No. 13 Newton made 10 bbls. at 1,192-1,208 feet.

Callahan County

Bradstreet and others' No. 1 Sawyer made 20 bbls. at 1,723-37 feet, total depth 1,739 feet. Canyon Oil & Gas Co.'s No. 5 Derrington flowed 150 bbls. at 1,402-20 feet. Cranfill & Reynolds' No. 3 Henderson made 55 bbls. at 1,389-1,405 feet. McChesney's No. 1 Derrington was shot with 10 quarts at 1,400-16 feet and pumped 30 bbls. Southern Petroleum Exploration Co.'s No. 1 Harris was dry and abandoned at 2,506 feet.

Clay County

Hamilton, Barkley & Meadows' No. 1 Scaling was dry and plugged at 3,472 feet. Faubion, Miller and McGann's No. 1 Scaling was also a duster at 905 feet. Grisham and others' No. 1 Conner was another failure at 1,002 feet.

Coleman County

Burke-Greis Oil Co. and Gwinnup's No. 4 Dibrell was junked and abandoned at 3,168 feet. Gilman and others' No. 1 Dibrell was dry and plugged at 2,250 feet. Jewell & Sill's No. 1 Smith was another failure at 2,015 feet. Two other dusters were Ramsey & Maxey's No. 1 Harris at 2,470 feet and Shadbolt & Creighton's No. 1 Garrett, at 1,810 feet.

Comanche County

Brown Drilling Co.'s No. 1 Evans was dry and abandoned at 3,770 feet.

Cooke County

Hooser Oil Co.'s No. 2 Dennis made 56 bbls. at 1,205-80 feet and 1,282-88 feet. C. C. Lanier's No. 1 Hyman made 45 bbls. at 1,556-87 feet. Lanier and others' No. 5 Hyman had broken sand at 1,217-52 feet, good for 65 bbls. Sun Oil Co.'s No. 1 Hyman made 132 bbls. at 1,164-72½ feet.

Eastland County

Eastland Oil Co.'s No. 3 Wright made 10 bbls. of oil and same amount of water at 1,576-94 feet. Mid-Kansas Oil & Gas Co.'s No. 1 Farmers State Bank was shot with 100 quarts at 2,725-50 feet, total depth 2,971 feet and made 100,000 feet of gas and a show of oil. Texas Pacific Coal & Oil Co.'s No. 1 Durocher pumped 8 bbls. at 3,100-10 feet, total depth 3,690 feet. Eastland Oil Co. and others' No. 1 Proctor and others made 30 bbls. of oil and 20 bbls. of water at 2,985-3,045 feet. Matthews & Terrell abandoned the location for No. 1 Scott. Navarro Oil Co.'s No. 1 Clark had 750,-000 feet of gas in sands at 1,274-82 and 1,286-88 feet, and was drilling ahead at the latter depth. Ross & Frost's No. 1 Falls was dry and abandoned at 1,605 feet. Gulf Production Co.'s No. 7 J. D. Parsons-A pumped 27½ bbls. at a total depth of 1,539 feet.

Jack County

Hester, Hawkins & Staley's No. 3 Snedeker made 4 bbls. from sand at 783-92 feet.

McCulloch County

Van Bibber and others' No. 2 Roberts was dry and abandoned at 1,000 feet.

Montague County

Empire Gas & Fuel Co.'s No. 1 Maddox was dry and abandoned at 2,140 feet. Farlan Oil Co.'s No. 2 Maddox made 70 bbls. at 888-99 feet. Fleming & Kinbell's No. 5 Hinds-B was dry and plugged at 990 feet. Gulf Production Co.'s No. 1 N. J. Howard and others-A pumped 30 bbls. at 836 feet, total depth. Pure Oil Co.'s No. 2 Maddox-C made 135 bbls. at 885-907 feet. The Texas Company's No. 1 Bouldin was dry and abandoned at 2,120 feet; No. 1 Maddox-C was also plugged at 2,275 feet; No. 14 Oldham and others made 95 bbls. from broken sand at 1,096-1,100 feet and sand at 1,-072-96 feet; No. 15 Oldham had sands at 1,080-86, 1,095-1,114 and 1,117-27 feet, good for 65 bbls.; No. 16 swabbed 137 bbls. from sands at 1,060-83, 1,088-94 and 1,102-06 feet, total depth 1,110 feet; No. 17 Oldham swabbed 75 bbls. at 1,067-1,115 feet, broken. Texhoma Oil & Refining Co.'s No. 3 Bouldin-A swabbed 104 bbls. at 1,152-59 feet; No. 10 Howard and others swabbed 45 bbls. at 1,318-60 feet; No. 9 Howard-A made 40 bbls. at 1,051-1,127 feet; No. 1 Maddox-A made 45 bbls. at 866-84 feet; No. 6 Rowland made 165 bbls. from broken sand at 1,018-90 feet.

Palo Pinto County

Meyers & Williams' No. 1 Satterfield heirs made 500,000 feet of gas at 989-1,005 feet.

Shackelford County

Carter and others' No. 1 English was dry and abandoned at 1,004 feet. Derby Oil Co.'s No. 1 Moberly made 20 bbls. at 1,019-25 feet, total depth 1,042 feet. Hope Petroleum Co.'s No. 1 Poindexter was a failure at 1,302 feet; No. 8 Reynolds was dry and plugged at 1,501 feet. Humble Oil & Refining Co.'s No. 8 Cook made 287 bbls. at 1,335-49 feet. Panhandle Refining Co.'s No. 1 Flippen was a duster at 1,302 feet. Reclamation Oil Co.'s No. 1 Jeter was dry also at 1,360 feet.

Roeser & Pendleton and Marland Oil Co.'s No. 18 Cook A-84 made 75 bbls. at 1,375-85 feet; No. 20-A-84 made 50 bbls. at 1,110-20 feet; No. 22-A-84 made 75 bbls. at 1,263-73 feet; No. 23-A-84 was dry and abandoned at 1,378 feet; No. 24-A-84 made 100 bbls. of oil and had 750,000 feet of gas at 1,107-22 feet; the location for No. 10-A-85 was abandoned; No. 16-A-85 made 125 bbls. of oil and 2,500,000 feet of gas at 1,275-88 feet.

Roeser & Pendleton's No. 2-B-61 made 200 bbls. at 1,303-10 feet; No. 9 Cook B-84 was dry and abandoned at 1,415 feet; No. 15-B-85 pumped 40 bbls. at 1,197-1,212 feet. Skelly Oil Co.'s No. 1 Matthews pumped 12 bbls. at 775-88 feet.

Stephens County

Mid-Kansas Oil & Gas Co.'s No. 1 S. H. Hill, account 2, flowed 500 bbls. at 3,163-86 feet. Sun Oil Co.'s No. 6 Carey made 75 bbls. at 2,221-31 feet. Texas Fidelity Oil Corp.'s No. 1 Pratt was shut down for orders and making 17,000,000 feet of gas at 1,906-36 feet.

Wichita County

Dr. C. E. Bailey and others' No. 1 H. Willis was dry and abandoned at 1,307 feet; No. 2 was also plugged at 585 feet. Ascot Co.'s No. 7 Burnett was another failure at 2,342 feet. Central Holding Co.'s No. 4 G. Jennings was plugged at 1,985 feet. Empire Gas & Fuel Co.'s No. 19 Pierce Oil Corp. pumped 3 bbls. of oil and 30 bbls. of water at 1,535-48 feet. Kimmel & Dillard's No. 1 Fassett & Tuttle pumped 108 bbls. at 1,355-61 feet. Panhandle Refining Co.'s No. 1 Griffin pumped 108 bbls. of oil and 3 bbls. of water in the first 18 hours at 1,830-34 feet. Patterson's No. 1 Douglas, Block 2, pumped 10 bbls. at 1,071-77 feet. Petroleum Investment Co.'s No. 19 Fisher pumped 10 bbls. at 1,570-77 feet; No. 5 Allen & Kemp-D pumped 60 bbls. at 1,646-53 feet. Ryan Petroleum Co.'s No. 1 Henson was dry and abandoned at 537 feet; No. 79 Nance pumped 32 bbls. at 1,293-1,333 feet. The Texas Company's No. 5 Foster & Saunders was dry and abandoned at 544 feet; No. 310 Waggoner pumped 60 bbls. at 542-48 feet. Texhoma Oil & Refining Co.'s No. 19

RUNS TO STILLS HIGHEST IN YEAR

(Continued from Page 32)

REFINING OPERATIONS IN NORTH CENTRAL TEXAS

(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs September 1	Runs August 1
Amarillo Refining Co., Amarillo	5,000	3,000	3,000
American Refining Co., Wichita Falls	7,000	4,700	4,300
Buffalo Refining Co., Sherman	500	Shut down	Shut down
Col-Tex Refining Co., Colorado	7,500	6,500	4,500
Crystal Petroleum Co., Burkburnett	1,000	Shut down	Shut down
Dale Oil & Refining Co., Electra	3,000	2,200	900
Falls Refining Co., Wichita Falls	1,500	500	600
Gulf Refining Co., Fort Worth	15,000	6,400	6,400
Hagaman Refining Co., Tiffin	2,000	275	275
Humble Oil & Refining Co., Burkburnett	4,000	1,900	1,900
Iowa Park Producing & Refining Co., Iowa Park	2,500	1,500	1,200
Kent-Middleton Refining Co., Angus	2,000	1,900	1,600
Magnolia Petroleum Co., Fort Worth	12,000	6,700	6,700
Magnolia Petroleum Co., Corsicana	10,000	2,700	2,700
Megargel Refining Co., Megargel	2,000	600	600
Miller Petroleum Co., Wichita Falls	3,000	1,300	1,400
Noble Oil & Gas Co., Burkburnett	5,000	3,600	3,000
Olney Oil & Refining Co., Olney	1,200	1,100	1,100
Oriental Refining Co., Dallas	6,000	Shut down	Shut down
Oriental Refining Co. (Trinity), Dallas	5,000	2,800	2,800
*Oriental Petroleum Co., Wichita Falls	3,000	2,800	2,800
Panhandle Refining Co., Wichita Falls	4,000	2,300	2,700
Paris Refining Co., Paris	250	250	250
Peerless Refining Co., Wortham	400	Shut down	Shut down
The Petroleum Corp., Electra	2,000	Shut down	Shut down
Primrose Refining Co., Wichita Falls	1,500	1,000	Shut down
Producers Refining Co., Gainesville	5,000	4,000	4,000
Simms Oil Co. (Clayton), Dallas	4,500	4,200	4,100
Star Refining & Producing Co., Fort Worth	1,800	Shut down	Shut down
Tidal Western Refining Co., Burkburnett	3,000	2,500	2,500
The Texas Company, Dallas	15,000	9,700	9,700
Texas Pacific Coal & Oil Co., Fort Worth	6,000	2,300	2,300
Texhoma Oil & Refining Co., Wichita Falls	7,000	4,600	4,600
Transcontinental Oil Co., Fort Worth	5,000	1,500	1,800
Waggoner Refining Co., Electra	3,400	2,800	2,800
Western Oil Corp. (Sunshine), Wichita Falls	3,000	Shut down	1,500
White Eagle Oil & Refining Co., Fort Worth	4,000	2,500	2,000
Wilson Brothers Refining Co., Wichita Falls	2,500	Shut down	Shut down
Total	167,550	89,525	84,025

*Operated by Magnolia Petroleum Co.

REFINING OPERATIONS IN NORTH LOUISIANA

(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs September 1	Runs August 1
Crystal Oil Ref. Corp. (Caddo Central), Shreveport	10,500	7,800	8,500
Great Southern Refining Co., Ardis	2,000	Shut down	Shut down
Louisiana Oil Refining Corp., Shreveport, Bossier	19,000	18,500	17,000
Shreveport Producing & Refining Co., Shreveport	5,500	5,000	4,500
*The Texas Company, Shreveport	7,000	5,700	6,000
Total	44,000	37,000	26,800

*Topping.

REFINING OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs September 1	Runs August 1
Cross Refining Co., Smackover	4,000	3,900	3,700
Home Refining Co., Camden	500	75	100
Home Oil & Refining Co., Hot Springs	500	50	50
Houston Oil Co., Camden	5,000	1,800	2,000
Kettle Creek Refining Co., Pearson	4,000	3,900	3,300
Lion Oil & Refining Co., El Dorado	10,000	7,500	7,600
Newark Refining Co., El Dorado	1,500	1,000	1,500
Ouachita Valley Refining Co., El Dorado	1,500	650	700
Root Refineries, El Dorado	2,500	2,475	2,000
E. M. Tulle, El Dorado	1,000	250	250
Total	30,500	21,600	21,300

Waggoner pumped 2½ bbls. at 590-97 feet.

Wilbarger County

Humble Oil & Refining Co.'s No. 6 Waggoner-I made 35 bbls. at 1,875-95 feet, total depth 1,896 feet; No. 9 Waggoner-K swabbed 100 bbls. in 12 hours at 1,867-81 feet, total depth 1,888 feet; No. 7 Waggoner-M was estimated good for 60 bbls. at 2,322-40 feet; No. 13 Waggoner-M swabbed 129 bbls. at 2,358-69 feet, total depth 2,370 feet. Milham Corp.'s No. 5 Waggoner-B swabbed 55 bbls. at 2,550-62 feet. Murchison & Fain's No. 1 Fluhman was junked at 720 feet and the rig skidded.

Phillips Petroleum Co.'s No. 3 Waggoner-L was shot with 8 quarts at 1,878-80 feet, total depth 1,905 feet and made 10 bbls.; No. 4 Waggoner-QQ swabbed 240 bbls. at 2,300-04 feet in lime and sand at 2,329-43 feet; No. 9 Waggoner-NN swabbed 80 bbls. from lime at 2,269-72 feet and sand at 2,303-17 feet; No. 1 Waggoner-QQ pumped 60 bbls. at 1,874-89 feet; No. 1 Waggoner-AAA was dry at 3,504 feet and was being plugged. G. C. Wood's No. 1 Haney was dry and abandoned at 2,602 feet.

Wise County

Transcontinental Oil Co.'s No. 1 Castleberry was dry and abandoned at 4,570 feet.

Young County

Atkinson & Sandefer's No. 3 Ford was estimated good for 25 to 35 bbls. at 1,919-45 feet. Coones & Hotchkiss' No. 1 Morrison flowed 240 bbls. in 12 hours at 2,263-65 feet and had 400 feet of oil in the hole. Halmack Oil Co.'s No. 1 Logan and others was dry and plugged at 2,362 feet. Chenault & Lea's No. 7 Rachuig swabbed 100 bbls. at 1,158-60 feet. Madden and others' No. 5 Benson pumped 55 bbls. at 858-81 and 908-15 feet. J. J. Moran's No. 4 Stewart pumped 35 bbls. at 774-804 feet. Panhandle Oil & Refining Co.'s No. 1 Prideaux had 700 feet of oil in the hole and was being put on the pump at 715-30 feet. Ruff and others' No. 2 Stewart made 40 bbls. at 804-27 feet. Texhoma Oil & Refining Co.'s No. 1 Routan was dry and abandoned at 901 feet. Tidal Oil Co. and others' No. 2 Benson made 35 bbls. at 910-20 feet; No. 8 Benson pumped 8 bbls. at 889-927 feet.

PRODUCTION BY FIELDS FOR WEEK ENDING AUGUST 30, 1926

ELECTRA

Atlantic Oil Prod. Co.	54
Empire Gas & Fuel Co.	770
Gulf Prod. Co.	911
Humble Oil & Ref. Co.	140
Magnolia Pet. Co.	3,402
Panhandle Ref. Co.	41
Phillips Petroleum Co.	17
Prairie Oil & Gas Co.	106
Rio Bravo Oil Co.	511
The Texas Company	3,353
Texhoma Oil & Ref. Co.	1,204
Miscellaneous	5,465
Total	15,974

BURKBURNETT

Gulf Prod. Co.	433
Humble Oil & Ref. Co.	438
Magnolia Pet. Co.	2,629
Panhandle Ref. Co.	217
Simms Oil Co.	14
Sinclair Oil & Gas Co.	151
Skelly Oil Co.	170
The Sun Oil Co.	43
The Texas Company	373
Texhoma Oil & Ref. Co.	526
Miscellaneous	7,210
Total	12,204

IOWA PARK

Atlantic Oil Prod. Co.	57
Gulf Prod. Co.	117
Humble Oil & Ref. Co.	129
Magnolia Pet. Co.	320
Panhandle Ref. Co.	34
Roxana Petroleum Corp.	7
Simms Oil Co.	74
The Texas Company	175
Texhoma Oil & Ref. Co.	579
Miscellaneous	2,796
Total	4,288

WILBARGER

Atlantic Oil Prod. Co.	55
Empire Gas & Fuel Co.	905
Gulf Prod. Co.	55
Humble Oil & Ref. Co.	2,946
Phillips Petroleum Co.	5,836
Prairie Oil & Gas Co.	163
Roxana Petroleum Corp.	390
The Texas Company	22
Texhoma Oil & Ref. Co.	78
Miscellaneous	4,100
Total	14,550

ARCHER

Atlantic Oil Prod. Co.	231
Barnsdall Oil Co.	929
Cosden Co.	350
Empire Gas & Fuel Co.	530
Gulf Prod. Co.	2,296
Humble Oil & Refining Co.	1,112
Magnolia Petroleum Co.	1,529
Marland Oil Co.	695
Panhandle Ref. Co.	122
Phillips Petroleum Co.	558
Prairie Oil & Gas Co.	1,860
Roxana Petroleum Corp.	274
Simms Oil Co.	877
Sun Oil Co.	261
The Texas Company	3,411
Texhoma Oil & Ref. Co.	2,700
Tidal Oil Co.	37
Miscellaneous	12,062
Total	29,844

YOUNG

Atlantic Oil Producing Co.	492
J. S. Cosden	235
Gulf Production Co.	207
Humble Oil & Ref. Co.	259
Magnolia Petroleum Co.	182
Marland Oil Co.	2
Mid-Kansas Oil & Gas Co.	10
Panhandle Ref. Co.	128
Phillips Petroleum Co.	20
Prairie Oil & Gas Co.	10
Roxana Petroleum Corp.	135
Simms Oil Co.	562
Sinclair Oil & Gas Co.	346
Sun Oil Co.	249
The Texas Company	355
Texhoma Oil & Ref. Co.	359
Tidal Oil Co.	66
Miscellaneous	4,710
Total	8,277

STEPHENS

Arkansas Fuel Oil Co.	25
Empire Gas & Fuel Co.	25
Gulf Prod. Co.	1,108
Humble Oil & Ref. Co.	585
Magnolia Petroleum Co.	330
Mid-Kansas Oil & Gas Co.	1,430
Phillips Pet. Co.	360
Prairie Oil & Gas Co.	760
Republic Prod. Co.	130
Roxana Petroleum Corp.	50
Simms Oil Co.	30
Sinclair Oil & Gas Co.	75
Sun Oil Co.	160
The Texas Company	922
Texas & Pacific Coal & Oil Co.	1,130
Transcontinental Oil Co.	2
Miscellaneous	4,230
Total	11,352

SHACKELFORD

Amerada Petroleum	4
Empire Gas & Fuel Co.	20
Humble Oil & Ref. Co.	1,242
Independent Oil & Gas Co.	10
Magnolia Petroleum Co.	65
Phillips Petroleum Co.	560
Prairie Oil & Gas Co.	10
The Texas Company	166
Texhoma Oil & Refining Co.	75
Miscellaneous	8,325
Total	10,477

RANGER

Arkansas Fuel Oil Co.	5
Gulf Prod. Co.	573
Humble Oil & Ref. Co.	45
Magnolia Petroleum Co.	550
Mid-Kansas Oil & Gas Co.	105
Panhandle Ref. Co.	125
Phillips Petroleum Co.	15
Prairie Oil & Gas Co.	540
Republic Prod. Co.	40
Simms Oil Co.	25
Sinclair Oil & Gas Co.	275
The Texas Company	140
Texas & Pacific Coal & Oil Co.	795
Transcontinental Oil Co.	30
Miscellaneous	2,420
Total	5,683

EASTLAND-COMANCHE

Empire Gas & Fuel Co.	5
Humble Oil & Ref. Co.	85
Magnolia Petroleum Co.	575
Mid-Kansas Oil & Gas Co.	140
Phillips Petroleum Co.	35
Prairie Oil & Gas Co.	95
Sinclair Oil & Gas Co.	15
Skelly Oil Co.	125
The Texas Company	100
Transcontinental	20
Miscellaneous	670
Total	1,865

BROWN

Cosden Co.	540
Humble Oil & Ref. Co.	4,200
Phillips Petroleum Co.	180
Prairie Oil & Gas Co.	600
Simms Oil Co.	25
The Texas Company	766
Witherspoon Oil Co.	20
Miscellaneous	6,020
Total	12,351

CALLAHAN

Amerada	105
Humble Oil & Ref. Co.	3
Prairie Oil & Gas Co.	875
The Texas Company	90
Texas & Pacific Coal & Oil Co.	20
Witherspoon Oil Co.	
Miscellaneous	3,600
Total	4,693

MISCELLANEOUS POOLS

Reagan County	28,378
Clay County	562
Montague County	6,747
Jack County	215
Throckmorton County	1,749
Baylor County	165
Palo Pinto County	449
Coleman County	1,875
Scurry County	51
Mitchell County	3,621
Crockett County	1,118
Upton County	4,794
Total	49,724

PANHANDLE

Carson County	3,497
Hutchinson County	109,298
Wheeler County	245
Gray County	3,750
Total	116,790
Grand total	297,882

ABOLISH OIL MONOPOLY

The Canton, China, Government has abolished monopoly on petroleum products and substituted tax of $2 Canton currency per unit of 10 gallons on gasoline and kerosene. Oil companies are required to reapply for licenses for importation and distribution.

CALIFORNIA MARKET DEMAND VERY HEAVY

LOS ANGELES, Calif., Sept. 4.—Domestic demand for U. S. motor gasoline continues very heavy. Vacation season being in full swing with desirable weather for touring, long motor trips are being made. While gasoline consumption is expected to be less than in August, marketers in general believe the decrease will be slight and the present heavy consumption will continue far into the month.

During the past week, shipments from California to the Atlantic Seaboard were in excess of 700,000 bbls. Of this approximately 155,000 bbls. was gasoline and almost 230,000 bbls. was gas oil, presumably to be used as cracking stock at eastern refineries. This latter demand has been fairly heavy and consistent throughout the summer.

Figures just released by the Bureau of Mines covering California refiners' operations for July, 1926, show that gasoline production was 3,899,264 bbls., or a daily average of 125,783 bbls., an increase of 1.57 per cent over the previous month, or 12.54 per cent over July, 1925. In spite of this heavy production and the material increase over the corresponding month of last year, stocks of gasoline decreased slightly, which shows consumption is continuing to grow at a very satisfactory rate.

According to Government figures, natural gasoline production during July increased by some 600 bbls. daily, over the previous month. While consumption increased during the month, the increase was not so great as of production, consequently some natural gasoline went into storage. Stocks at the end of July were 218,249 bbls., approximately nine days' supply at the present rate of consumption. While this storage when transferred into a daily supply basis seems rather small, it is substantially larger than a few months ago when the industry had stocks amounting to between five and six days' supply. This storage of natural gasoline, however, is not excessive and while the market is not as strong as it was a few months ago, it still maintains the firmest position of all the petroleum products marketed in California.

California marketers are closely watching price situations both in the Mid-Continent and eastern fields. The recent increase in national production and the even more recent reduction of crude prices in certain localities is a factor in part influences the local market. While California production of crude oil during August showed a slight decrease, the opening of the Seal Beach Field and the extension of some older fields, indicates production will continue to hold up at close to the present levels. While market conditions on the whole in California are quite steady, the market is not in a position to absorb any very great increase in crude production.

TEXAS TO PASS CALIFORNIA?

FORT WORTH, Tex., Sept. 4.—That Texas, by the first of the year will displace California oil production is the opinion of J. D. Collett, president of the Texas division of the Mid-Continent Oil and Gas Association, after an extended trip through west Texas.

"I believe that not even those who have been predicting most for the unexplored territory of west Texas yet really realize the half of its possibilities," he declared.

TEN MILLION GASSER IN OHIO

PITTSBURGH, Pa., Sept. 4.—A 10,000,000-foot gas well has been brought in on the Mehaney farm, near Cambridge, Ohio, making a total of 30,000,000 feet struck in the Cambridge Gas Field within three days. An 11,000,000-foot well on the W. L. Ford place was the largest brought in during the preceding two days. Hundreds of millions of feet of gas have been lost on account of difficulty in capping.

"4 Jacks" that are "Aces" in every oil field

Templeton, Kenly & Co., Ltd.
Sole Mfrs.
Chicago, Illinois

Simplex Jacks
At Your Supply House

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

LEASES—PRODUCTION

LEASES

Desirable leases in the Kevin-Sunburst Oil Field of Montana. Close to production; liberal drilling requirements. East or west side.

Producing royalties and royalties just ahead of the drill.

MARK HUNT
P. O. Box 1094 Great Falls, Mont.

FOR SALE—160-acre lease, or will lease for a drilling contract. Stephens County, Texas. Address, Box 389, Healdsburg, Calif.

HAVE 8,000 acres under lease in Wood County, Texas. Will sell outright with fifty cent rentals annually new leases, run five years, want fifty cents cash per acre. Or will assign this block for deep test. Box 466, Winnsboro, Texas.

DRILLING propositions in Warren and Ohio Counties, Ky. Also cheap acreage in advance of production in Ohio County. R. E. Cope, Bowling Green, Ky.

ROYALTY UNDER DRILLING WELL

In large or small undivided interests (deeded) in Hutchinson County, Texas.

Also 1,000 acres joining or between drilling wells by major companies.

P. O. Box 59, North Amarillo, Texas

OIL AND GAS LEASES—Also royalties, Kay County, Oklahoma, the richest oil country on earth. William C. Uphoff, Blackwell, Okla.

M'CLAIN COUNTY, Oklahoma, oil leases; very reasonable. My own land. Joe P. Crawford, Oklahoma City, Okla.

I CONTROL over million acres ten-year paid up oil leases, 75 cents up. And wildcat blocks to drill in Southwest Texas and Mexico. Am familiar with geology and development. Write me.

A. C. DAUCHY
Bedell Bldg., San Antonio, Tex.

LEASES FOR SALE on lands in Garfield, Grant, Alfalfa, Major and Kingfisher Counties, Okla. Also royalties. A. B. Hugo, Enid, Okla.

TEN-YEAR oil leases. No rentals. Crockett County, Texas. Send for true map. Paul Konz, Box 291, Fort Worth, Tex.

I HAVE LEASES, 160-acre tracts up, in Lipscomb and Hemphill Counties where the big play is now on at $2 to $3 per acre. New leases made direct from owner of land to you. Dr. W. R. German, Canadian, Texas.

OMER McKOWN

Dealer in Leases and Royalty,
Maud Territory

MAUD, OKLAHOMA.

SOUTHWEST TEXAS—WINKLER, LOVING, REEVES, WARD, PECOS, CULBERSON COUNTIES

Drilling blocks. Leases. Royalties.
Ranches in fee.
H. F. Anthony, Pecos, Texas.

WE OWN the land. Will block 1,000 acres or more for producers, adjoining and in Section 6, Township 4n, Range 1e, 4½ miles from reliable development. Good structure. A. S. Peacock, Paoli, Okla.

SOUTHEAST NEW MEXICO

Can furnish practically proven leases in Artesia Field, Eddy County. Also other tracts in Eddy, Chaves and Lea Counties. Particulars on request.

H. T. ORCUTT
1114 Colcord Bldg., Oklahoma City, Okla.

HAVE 18,000 acres oil and gas leases solidly blocked for test 4,500 feet; 7-year leases, in T. 29, R. 20W, Woods County, Okla.; rentals $1 per acre. Begin 12 months after drilling contract signed. This acreage about 30 miles southwest of well drilling by Vickers Petroleum Co. and George Miller in Barker County, Kansas.

Also 12,000 acres, 5-year leases, for test 4,000 ft., T. 27, R. 19W, these blocks will stand the closest inspection. Come, take a look, all north of Cimarron River. W. A. Clark, Box 267, Alva, Okla.

LEASES—PRODUCTION

2,500-ACRE block oil and gas leases, Stephens County; running 5 years; no drilling obligations; $3.50 acre. Cylde Miller, Duncan, Okla.

WRITE for my state of Texas oil map free. Oil leases exclusively. Reference, Mercantile Agencies.

C. W. WEBSTER
W. T. Waggoner Bldg.
Fort Worth, Tex.

HAVE BUYERS for flush or settled production in Oklahoma and north Texas. Vern R. Hartman, P. O. Box 442, Dallas, Tex.

FOR SALE or lease—300 acres tested on all sides, Bartlesville sand. John McQuiston, Route 7, Independence, Kans.

AMARILLO PANHANDLE OIL FIELD

Underwriter Brainard Ranch oil and gas leases, 25,000 acres in Hutchinson County. Hutchinson County is the major producing area. New 5-year leases from 20 acres to 160 acres. Bought right, can sell at reasonable price per acre. Write for map and prices. I have handled, as underwriter, over 60,000 acres in the field on which over 80 wells are now drilling or producing. Ed R. Mayer, Amarillo Hotel Bldg., P. O. Box 1186, Amarillo, Tex.

FOR SALE—Leases and settled production in Warren, Allen and Barren Counties, also drilling propositions in shallow territory. Warren and Allen Counties oil is now posted at $2.10 to $2.40 per bbl. and Barren County at $2.85. W. P. Harley, Bowling Green, Ky.

M. ELDER & COMPANY

Dealers in
Leases, Royalties and Productions,
Drilling Contracts, Wildcat Blocks.
Laredo District
HAMILTON HOTEL, LAREDO, TEX.

OIL LEASES in San Juan Field. A few tracts ranging from 80 to 640 acres each at $1 per acre. First come, first served. Frank Staplin, Santa Fe, N. Mex.

HAVE SEVERAL pieces of flush and settled production for sale in Oklahoma and Wichita Falls districts. Prices reasonable and terms can be arranged if necessary. P. O. Box 1144, Dallas, Tex.

TEXAS PANHANDLE EXTENSION, UNION COUNTY, NEW MEXICO.

Offers opportunities to make big money. New 5-year leases, 50c to $1 yearly rental. New state 5-year leases 5c to 15c rental. Many wells drilling in territory. 40 acres to 5,000 acres. Price $1 to $2.50 acre. Prices advancing rapidly. Two drilling blocks on structure. James R. Thomas, leases and royalties, Oklahoma City, Okla.

NEW MEXICO

Lea County Acreage
E. T. Buckley
403 Sunshine Bldg.,
Albuquerque, N. M.

ROYALTIES—PRODUCTION

TEXAS PANHANDLE

Royalties in large or small units to suit any size buyer in fastest growing and most rapid developing oil field in middle west. Write for list of offerings. B. O. Taylor, 306 Blackburn Bldg., Amarillo, Tex.

ROYALTIES—Can secure Arkansas royalties on structure in line with production where there is most certain to be much activity in the near future. Get in before the rush. Correspondence invited. Harry Spooner, Stephens, Ark.

$1,000 WILL BUY one-fourth interest in mineral rights on 200 acres Stephens County, Oklahoma. P. O. Box 806, Duncan, Okla.

ROYALTIES—PRODUCTION

WILL BUY royalty or leases for responsible parties or oil companies on small commission.

One trial and you will be our regular client. Have regular lease man and know the game.

FREEMAN OIL CO.
Pauls Valley, Garvin County, Oklahoma.

WANTED—Producing royalties Oklahoma and Kansas. Give full details. P. O. Box 502, Independence, Kans.

KEVIN-SUNBURST HOLDING CORPORATION
Shelby, Montana

We handle royalties and leases in the best areas in the Kevin-Sunburst Field. Quick action will secure excellent leases with liberal terms. All data on field gladly furnished upon request.

ONE-THIRTY-SECOND royalty on Marland coredrilled blocks in Kansas; priced right. Write 304 Orpheum Bldg., Wichita, Kans.

ROYALTIES, Leases—West Texas—for sale. Green & Hines, 712 Alexander Bldg., Abilene, Tex.

FOR SALE—EQUIPMENT

3-INCH PIPE FOR SALE

Five miles 3-in. screw line located at Walnut, Kans. 25 H.P. Superior Engine, push and pull power. Johnson & Weekard, Garnett, Kans.

TWO 250-horsepower Foos Gas Engines; four 75-horsepower G. E. motors; one 200-horsepower Westinghouse motor, 3-phase, 60-cycle, 2,300-volt; one 78x18 boiler and stack, steel casing, 140-pound pressure; one 14x14 Chase Steam Engine; one 8-ply rubber belt, 16 inch; all above equipment in new condition. P. O. Box 21, Dallas, Tex.

FOR SALE—Two No. 19 and one No. 25 Armstrong and one No. 38 Star drilling machines with complete sets of tools. Rigs are in good running condition. W. P. Harley, Bowling Green, Ky.

FOR SALE

Eight steel storage tanks 8 feet diameter by 40 feet long; located at Little Rock, Ark. Price $575 each f.o.b. cars.

Two No. 12 Sweetland filter presses. Phone, write or wire.

CONSOLIDATED PRODUCTS COMPANY, Inc.
15 Park Row New York City

USED LINE PIPE FOR SALE

50,000 feet 3-inch
75,000 feet 4-inch
50,000 feet 6-inch

Two miles 60-pound first-quality relaying rails.

For immediate shipment from our Texas yards.

KEYSTONE PIPE & SUPPLY CO.
315 W. T. Waggoner Bldg.
Fort Worth, Texas.

FOR SALE—Machine shop doing nice busines in live oil field town on railroad. One 24-inch by 14-foot Pittsburgh lathe, with oil field taper attachment; 1 18-inch by 11-foot Cincinnati lathe, with compound taper attachment; 1 8-inch Standard Weiland pipe machine, with 3-inch to 8¼-inch dies; 1 24-inch Ryerson drill press; 1 No. 20 Hampton drill press, complete assortment of drills; 1 14-inch power hack saw; 1 15-h.p., F. & M. oil engine; 1 20-h.p., G. M. motor; 1 3-h.p. Wagner motor; 1 combination cutting and welding torch, with gauges. A large stock generator parts, fishing tool and casing nipples. Other holdings devote too much time. Box B-450, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—All or part of an air cleaning outfit for oil wells. Box 327, Dewey, Okla.

27"x16' Bridgeford lathe, $600.
24"x12' Lodge & Shipley lathe, $850.
No. 60 Heald cylinder grinder, $750.
No. 2 Barrett cylinder boring machine, $700.

We carry a complete line of machinery and supplies. Terms can be arranged if desired. Send for list.

Cincinnati Machinery & Supply Co.
219 East Pearl St.,
Cincinnati, Ohio.

MACHINE TOOLS—Quick sale, three "Lodge & Shipley" lathes; "Beaudry" power hammer, shaper, radial drill, Oxweld generator, pipe machines, large planer, bolt threader, emery stand. Seddon Murphy Machine Co., Houston, Tex.

EMVEE

SIGHT FLOW SEPARATOR

Permits of carrying back pressure on pumping wells, now conceded to be very desirable.

Saves every foot of gas for use on the lease.

Automatically separates oil, gas and water.

Absolutely holds the gravity of the crude.

Reduces amount of B. S. to the minimum.

Eliminates evaporation.

You can see the wells pump.

Positively fool proof.

Sizes 16 bbl., 25, 50, 100 and 130 Bbl.

Send for descriptive matter.

M. & V. TANK COMPANY
Wichita Falls, Texas

ADVERTISING RATES

	1 Time	2 Times	3 Times	1 Mo.
3 lines	1.05	1.80	2.55	3.30
4 lines	1.40	2.40	3.40	4.40
5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

(Six words usually make a line.)

Compute white space at the above rates. Mail your advertisement to

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

FOR SALE

1—De LaVergne 65-h.p. Type D.H. Oil Engine.

1—Gould Centrifugal Pump, 1750 G.P.M.

8—14 ft. by 30 ft. fire stills, never been fired.

2—De La Val Centrifugal Separators.

Box B-418, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE at a bargain—2,500-bbl. skimming plant complete. Also two Blaisdell cracking units in excellent condition. Will sell complete or in part. Anyone needing stills, condensers, towers, boiler, tanks or pipe, write Box 1088, Little Rock, Ark.

REFINERY equipment for sale. Two boilers, condenser boxes, towers, stills. Phone 136, W. Bogart, Burkburnett, Tex. Box 152.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

FOR SALE—EQUIPMENT

FOR SALE—Refinery equipment. A. F. Williams, El Dorado, Kansas.

FOR SALE
10,000 feet 2"-4-lb. Tubing.
25,000 feet 2" Line Pipe.
30,000 feet 3" Line Pipe.
10,000 feet 6⅝"-24-lb. DBX Casing.
6,500 feet 8¾"-32-lb. DBX Casing.
1,000 feet 10"-40-lb. Casing.
1,000 feet 12½"-50-lb. Casing.
This material is once run and guaranteed as to threads, couplings, etc. Pipe located in Ft. Worth and North Central Texas. Immediate shipment.
DIAMOND PIPE & SUPPLY CO.
Ft. Worth, Texas

PUMPS

New and Slightly Used
We have the following refinery pumps for sale at a great saving. Some are new—the balance used but a short time. They can be inspected at our plant:
3 Wilson-Snyder Vertical, size 14x9-x24.
4 Dean Brothers Vertical, size 10x-12x24.
1 Dean Brothers Horizontal, size 10x-12x14x12.
Will sell in a lot or singly.
GRAVER Corporation
East Chicago, Indiana

MANUFACTURING MACHINISTS

Screw machine products, sucker-rod fittings, swivels, pumps, etc. Heat treating. Contract Manufacturing. Send B/P or samples for quotations. Accurate work, prompt delivery.
TURNER-WARNER SCREW CO.
1226-34 Lydia Ave.,
Kansas City, Mo.

CRAGO CUT GEARS
Worthy of your confidence. General machine work. 1416 Walnut, Kansas City, Mo. Phone Harrison 7660.

FOR SALE—MAPS

ROCK MAP COMPANY, Houston, Tex Just completed maps of Matagorda and Guadalupe Counties, with owners and leases. Complete road map of Fort Bend County.

ADVERTISING RATES

	1 Time	2 Times	3 Times	1 Mo
3 lines	1.05	1.80	2.55	3.30
4 lines	1.40	2.40	3.40	4.40
5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

(Six words usually make a line.)

Compute white space at the above rates

Mail your advertisement to

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

OIL DEVELOPMENT county maps. any county in Oklahoma or Panhandle of Texas, 50 cents each. Lindsay Map Co. Scott Thompson Bldg., Oklahoma City, Okla.

SOUTHEASTERN NEW MEXICO MAPS
Geological, Ownership and Sectional. Write for folder.
M. H. HUNTER CO.
Roswell, N. Mex.

EQUIPMENT WANTED

CRUDE STILL WANTED—Wanted to purchase 6'x30' crude still in good condition. Address Box 728, Cushing, Oklahoma.

POSITION WANTED

WANTED — Position by man who knows refining, from the latest in distilling and chemical treating of light oils to the latest in cracking. Knows heavy oils equally as well. Would consider position as foreman if conditions favorable for advancement. Box B-481, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED with reliable oil company. Sixteen years' experience, office, purchasing, warehouse and executive, with company operating in United States and Mexico; 34 years old, married; references. Address Box B-482, The Oil and Gas Journal, Tulsa, Okla.

EXECUTIVE, ACCOUNTANT and practical oil man, thoroughly competent to handle all accounting and income tax matters and having practical field experience in all branches of the business such as drilling, producing, leasing, pipeline, wholesale oil, etc. Age 40, now employed but seeking connection after September 1, due to sale of present company. Best of references. Prefer small company or independent operator where duties can be combined. Several years public accountant, appraisals, depletion, etc. Box B-475, The Oil and Gas Journal, Tulsa, Okla.

BOOKKEEPER-Accountant, thoroughly experienced, good references, go anywhere, can report at once. E. M. Huffman, P. O. Box 563, Huntington, W. Va.

EXPERIENCED oil man wants job as production man or scout for good company; over 15 years' experience; good references. Box 238, Gorman, Tex.

MECHANICAL ENGINEER, qualified by 12 years steam power and cracking plant experience, desires refinery connection in engineering and operating capacity. Particularly familiar with the development, construction and operation of the Dubbs Process in detail. Box B-390, The Oil and Gas Journal, Tulsa, Okla.

THOROUGHLY EXPERIENCED refinery man desires communication with anyone needing such a man. Box B-464, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

STEAM SPECIALTY SALESMAN

Wanted to represent us in open territory. Good commissions.

FRANCE PACKING CO.
6510 Tacony St., Philadelphia, Pa.

RANCHES—FARM LANDS

FOR SALE—Large Mississippi delta plantation as a walkout, $35 an acre; no trade. This year's crop will net $100,000. W. T. Pitts, the Land Man, Indianola, Miss.

FOR SALE—By owner, highly improved 80-acre farm; real home, 20 miles southeast of Kansas City; 3 miles south of Blue Springs on rock road; terms. Sam Flair, Lees Summit, Mo.

COTTON plantation in Yazoo Delta, 9 miles from Yazoo City, on gravel road and Y. & M. V. Ry. Station on property; land high and in good state of cultivation; price and terms reasonable. Address E. S. Birchett, Yazoo City, Miss.

RIVER FARM—117, improved; close to fishing stream; fruit; spring water; school on place; team, wagon and cow; $1,170. W. Arthur, Mountain View, Mo.

TEXAS PANHANDLE RANCH, 25,000 acres, near oil fields, for sale cheaper than lease. John P. Marrs, City National Bldg., Wichita Falls, Tex.

$3.50 PER ACRE, 10,000-ACRE RANCH WILL MAKE SPLENDID GAME PRESERVE

Good hunting and fishing. On Eleven Points River; 300 acres cultivated. Four sets buildings; heavy fence. Fine range. One-day shipment to St. Louis.
J. RICHARD BROOKS
Alton, Mo.

PATENT ATTORNEYS

REGISTERED PATENT ATTORNEYS
United States and Canada
Before disclosing your invention to anyone send for blank form.
Evidence of Conception
Bulletin "How to Establish Your Rights" and complete information free.
LANCASTER & ALLWINE
240 Ouray Bldg., Washington, D. C.

PATENT-SENSE — Valuable book (free) for inventors seeking largest deserved profits. References include prominent oil men. Write Lacey & Lacey, 718 F. St., Washington, D. C. Established 1869.

WANTED

IF YOU want a drilling contract in the Amarillo, Texas, oil field see me. If you have acreage for development I can also put you in touch with the driller. W. L. George, 307 E. 6th St., Amarillo, Texas.

WANTED—Party who has money to finance drilling one test on ten thousand acres under lease in Franklin County, Texas. Also have several large blocks will give for test. No monkey business if interested write Box 466, Winnsboro, Texas.

CAPITAL WANTED to finance valuable invention in oil industry; "faster cutting rock bit." Write Karl Fischer, 3806 Holmes St., Dallas, Tex.

ACREAGE WANTED
In shallow Mid-Continent Field for drilling contract; proven or close to production preferred. Also want leases, producing royalties and production. Give details. W. D. Woodriff, Gas & Electric Bldg., Denver, Colo.

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Full particulars furnished regarding investment of $100 to $500 in 40-acre oil and gas lease. Now producing, with present production assuring substantial income on investment, with possibilities for very large profits from further development. References furnished. S. L. Motter, 314 Holmes Bldg., Ft. Worth, Texas.

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$1,250 for one-sixteenth interest in completed well, in Butler Co., Kansas. Best geology. First sand expected at eighteen hundred—we are now down twelve-fifty; second sand 2,600; wells in trend about one mile north, made 2,400 bbls. at eighteen hundred. Want sell two interests for temporary expenses, until bottom hole money can be drawn down. First two applying get the interests. H. E. W., 811 First Natl. Bank, Wichita, Kansas.

AUCTION
Wednesday, September 15, 1926, 3½ miles northeast of Centerville, Kans., 840 acres with oil production, 200 head of livestock, grain, implements and household goods; $200 monthly income on royalties, extra good farming land with two sets of improvements, land and royalties sell separately on easy terms. Sale starts at 9:30 a. m. For particulars, write A. N. Smith, Centerville, Kans., or Gross-Johnston Auction Co., 404 Victor Bldg., Kansas City, Mo. H. M. Justice, Paola, Kans.

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Good Demand Reported In Chicago

Gasoline Stocks Available to Distributors Believed to Be Low and No Reason to Expect any Immediate Change

By J. B. Waldo

CHICAGO, Sept. 4.—Distribution of gasoline has been on a large scale during the past week, and judging by the way jobbers have been ordering they expect it to continue. At least they must have little gasoline in their tanks to have ordered so freely. There have been considerable sections where rains have been heavy to excessive but this has not seemed to interfere with the demand. Many jobbers have been ordering sparingly with the thought there might be a decline in crude and tankwagon prices which they have become accustomed to during August. Failing to have any such change the sentiment now is that the markets having held under really great pressure during August, there is no reason to expect any immediate changes. The general situation has also been greatly improved by the showing made of material inroads into the stocks of both crude and gasoline east of the Rocky Mountains.

The impression is becoming general, that stocks of gasoline that are available to the distributors of the Central West are not large but the contrary. During August expectation of a lower price reduced the buying by both jobbers and marketers and the bulk of the available supplies is owned by refiners who, in many cases, are sold up or sold ahead and have no reason to press their sales at the expense of profits. If, as is surmised by many and generall corroborated by reports from salesmen on the road and the active buying that has been noted, stocks of gasoline in jobbers hands are small, the jobber will be forced to come to the market for supplies at least equal to the actual consumption, which is large. Distributors from the largest companies down to the small local concerns report a good business. Executive heads of the large companies state they have recently "sold more gasoline than ever before" or that "they are very busy" or are having the "best trade in the history of the company." The station managers have surprised some heads of companies by the volume of gasoline ordered to the stations and one of the large companies has reported that several of its stations were so low they were buying in the local market to get supplies immediately to these stations, as the refinery was behind with its shipments.

Prices Advanced

There has been a considerable demand for cars in transit and in some cases premiums have been paid for such cars. Refiners have generally advanced their prices and some have gone beyond the 11¼-cent price which is generally quoted as the market and are asking from 10⅜ to 10½ cents. The Sinclair Refining Co. advanced its prices early in the week to 11⅛ cents for the 56-58 450 end point and to 11⅜ cents for the Motor grade. Later in the week Cosden advanced its prices to 11¼ and 11½ cents respectively and wired salesmen not to sell for less. Barnsdall, which had not sold at less than 11 cents, as did many, held at that price until convinced the market was firm at 11¼ cents. Occasionally some special sales have been made at less than the market but the supply of cheap gasoline is small. At the beginning of the week some business was done at as low as 10⅜ cents, not much but enough to talk about. Prices then advanced as noted until there is very little, if any, gasoline of full Motor grade to be bought at less than 11¼ cents. One indication that the 11¼-cent price is the general market is that one of the very large distributors in the Northwest who is accustomed to buy at "one-fourth under the market" was forced to pay 11 cents early in the week for 75 cars of motor gasoline for immediate shipment. There has also been considerable short selling by some of the more speculative marketers and these are in the market to cover their needs, if they can. Although Labor Day comes on Monday there has been a good demand, some say a surprisingly good demand to the very close of the week. This is, however, not a general condition as some sellers have found business not as good since Thursday although even these are doing business.

Anti-Knock Gasolines

The bulk of the demand is for the Motor grade and some of the lower gravities although the demand for these is less important than for Motor gasoline. There is a steady call for the anti-knock gasolines offered by refiners and in some instances they find the demand in excess of the refining capacity for this product. The Texas Company has been purchasing 60-62 400 endpoint gasoline presumably to make good the excess of its sales over the refining capacity. The matter of anti-knock gasoline is one that is giving the trade a good deal to think over. One refiner claims this product will be at its best when the colder weather comes as motorists like a quick start, while another refiner said that was the time when the troubles would begin with the anti-knock gasoline. Jobbers at their state meetings are discussing the subject largely from their viwepoint which is what the effect of the anti-knock will be on sales. There are some who believe that the standard of motor gasoline will be raised to a grading approximately on a level with that of the new gasoline. In reply the statement is made by refiners that it would decrease the possible quantity recovered from a given volume of crude by at least 20 per cent, which would necessarily restrict the supply and increase the cost. This might not prove to be the case is the opinion of other refiners. The fact is the trade is very much at sea regarding the whole matter but the experience of a few more months of refining and distributing will give the industry a stable foundation of results on which to act. There are some jobbers who claim their business has been greatly helped by this gasoline while others are much less favorable in their reports. There seems to be considerable difference in the anti-knock gasolines made by different plants and some are better liked than others for some reason. The demand for natural gasoline here is small but the market is strong and prices a little higher than a week ago. The higher gravities are very quiet.

Kerosene Stronger

Kerosene, which had seemed to have reached the peak of demand and price towards the close of last week, has shown renewed activity and strength. The advance in the tankwagon scale by the Standard Oil Co. of Ohio of 1 cent a gallon, effective on September 3, was of considerable effect in improving the local market, suggesting it was possible the local scale might be increased. There is an active demand but not for large quantities for immediate delivery, and the supply is limited as most refiners are booked ahead for one or two weeks. Some refiners have been in the market and some business has been placed by them, but the demand is limited by the lack of stocks. Many buyers believe that when the present grist of orders has been filled, they will get better prices. Others are willing to order for the future on the present low price of 9½ cents but refiners are unwilling to sell ahead as they have a good deal of faith the market will hold and possibly advance as the fall demand should continue with favorable conditions in the country districts which will permit the farmers to use their tractors. Right now the threshers are busy. The market is firm at 9½ to 9¾ cents, with an occasional refiner holding for 10 cents and claiming to be able to secure that price for early shipments.

Distillates

Distillates continue in much the same position as they have held for several weeks if not months. The demand is large, both for immediate delivery and for contracts, but the amount of business closed is limited. In one way and another distributors are securing some supplies or contract for shipments during the season but most of them admit when pressed that they are not in the position that they would like to be. If, as the burner manufacturers assert, 200,000 domestic oil burners have been installed since the beginning of last season this means the refiners will be called upon for from 500,000,000 to 600,000,000 gallons of furnace oils of all kinds over last season. This supposes that the winter is the same kind as last year. This would mean an increase in the demand of from 25 to 30 per cent. A year ago several, if not all, of the leading sources of supply had considerable stocks at the beginning of the season. There are few, if any, that have as much in storage today and most report much less, some none at all. When the refiner today closes a contract for the season he feels he is conferring a great favor on the customer no matter what the price may be or if the only price is the "market date of shipment." There are so many variations in the grades of distillates that the price depends a good deal on the sample. Straw color oils command a premium, so do those with a low flash. The former is due to the statements of distributors who have led their trade to consider a light oil as more clean than a dark oil. The demand for a low flash comes from those burners that require such qualities in the fuel used but the present tendency of the burner indu stry is to get away from these costly specifications and design burners that will use practically any grade of fuel oils except the heavy oils suitable only for industrial use. For this reason in part the market price for a distillate which is classed as straw although not light may vary from 5½ to 6 cents. One refiner has made contracts for a product that is dark in color but has a low flash and cold test with a 37-40 gravity at prices that began as low as 5 cents and at the close were 6 cents. That refinery is sold up not because the product is specially desirable but simply because it would make a price and give a contract for the dealers requirements.

Gas Oil Firm

Gas oil is firm and in fair demand by both industrial users and the distributors for resale. Here again the new processes of refining have introduced new grades and new problems. Two samples of gas oil were shown, both priced at 4¼ cents by their refiners. One was a dark, cracked gas oil with flash and pour tests that made it suitable for distributors to domestic users. The other was a light uncracked oil with a high flash and cold tests that confined it to the industrial buyers. There have been some sales made recently here of gas oils that did not resemble the specifications in the offerings and this has resulted in a number of rejections and some confusion in the market. There is some storing of gas oil going on by all classes of buyers, even some of the gas companies are filling some of their storage. The move is not general but rather under cover as buyers are afraid of boosting the market if they show too great willingness to buy. The market does not show as great firmness as fuel oil for there is hesitancy in buying, yet the demand is considerable and offerings are being fairly well absorbed as a whole. The bottom of the market is now 4¼ cents with 4½ cents the top and not generally obtainable except the product be really desirable for some special use, say as a burner oil.

Fuel Oil

The fuel oil market is firmly held by the refiners but the trade here say that it is difficult to do business. The viewpoint of the refiner seems to be that in the long run the user of oil for fuel will have to come to the holder and pay his price. This may prove to be true provided the refiner can hold his prices while selling slowly and from day to day or week to week. At least two well known local users of refinery fuel oil have recently tried out Smackover. This might not have been known if they had not been dissatisfied with the Smackover supplied and refused several cars. It was not a treated Smackover fuel and the quantity of water and other impurities was excessive. Some oil men claim it was not treated oil at all but simply crude that had been held in pits. These cases show the buyers are seeking every means to reduce their fuel costs.

The local dealers while not desiring to commit themselves really believe the market cannot advance to substantially higher prices without curtailing the consumption. There is little talk among users regarding the substitution of other fuels than oil, but they are doing a lot of thinking and if the season develops the fact that prices are to hold on a basis of the present costs to the consumer, there will be a lot of changing to other fuels. There are some who will pay the price for oil be it what it may, for their product is so improved or increased by the use of fuel oil that they will find it profitable to use oil as fuel. There are others with whom the use of oil for fuel is a matter of cost and convenience, largely the former, and they will be the ones that will change to coal or gas if the latter is made available at competing costs. A well posted traffic manager stated he knew several railroads were considering a change to coal from oil and the change was awaiting a final conviction in the mind of the management that costs were substantially permanent. The engineering department of one of the traffic organizations has been for several months securing data on the future of prices for coal and oil. The report makes no suggestion, but the conclusion is that coal is the more dependable source of supply at a reasonable price. All sorts of authorities are quoted in this report and the great mass of the testimony is that the supply of fuel oil is uncertain and probably will decrease while there is an ample supply of coal and prices will remain about as they are.

Coal Competition

The present supply of coal is ample here and is being added to rapidly. If the volume of fuel oils is to be so reduced as some refiners claim, the oil industry should not object to some of the large users changing to other fuels as they will be unable to supply their needs. This change will leave a more abundant supply for the industries that must have fuel oil and for such users as burn fuel oil to heat the larger class of buildings such as hotels, department stores, apartment houses, schools, hospitals and the like in the cities where the use of oil for fuel helps to keep the city clean in

more ways than one as it eliminates smoke and soot from the stacks and the dirt that accompanies truck deliveries of coal.

There seems to be no general practice at present regarding the stocking of oil. Some users have filled all or part of their storage and some have contracted for supplies for the winter. Others have done neither but are buying as little as possible and waiting with the hope there may be a decline in the market. Several concerns have expressed their readiness during the week to contract for the winter at the market price date of shipment with a maximum price but the prices named were in some cases $1.70 per barrel for a 24-26 gravity fuel oil and the sellers were not ready to contract on that basis. The ideas of some sellers were $2.00 as a maximum and others would not sign a contract with any limit to the advance. This grade is now held at $1.45 at the refineries and local sales are made at from that price up to $1.52½. There is no fuel oil available right now to buyers with the exception of Smackover at less than $1.35 and treated Smackover is being sold at $1.30 per barrel with some oil not treated sold in quantities by one concern at $1.22½ to $1.25.

Lubricants

The situation in lubricating oils is unchanged. The consumption is large and business good with compounders of motor oils. Refiners in several instances have been in the market for supplies to add to their own production. The industrial trade is improving and the only quiet spot seems to be the export situation which is very much affected by financial conditions abroad. There have been inquiries from exporting organizations but the results have not been an important volume of business, at least in this market.

Tankwagon

There have been no changes in the tankwagon situation in this territory and the sentiment is that there will be none in the immediate future or at least while the consumption is at its present level. The idea expressed by several of the largest distributors is that the demand is very likely to continue until well into the month and with favorable weather to run through September. The Labor Day consumption is expected to make a drain on jobbers' supplies but orders have been placed liberally during the week which will arrive at their destinations in time to replenish the stocks of many jobbers and there may be a quiet market while these supplies are being reduced by the demand following the holiday. There are some points in the territory where the prices are not maintained but these are unimportant compared with last year and two years ago, and the situation generally as regards the tankwagon market is considered satisfactory. There have been local rumors of a possible tankwagon davance but these are regarded as mere guesses with no foundation in conditions.

PENNSYLVANIA MARKET IS HOLDING UP WELL

OIL CITY, Pa., Sept. 4.—Pennsylvania oil products are holding up remarkably well despite cooler weather and much rain. One of the big features is that fact that neutrals are still in as good demand as ever with no reduction in prices. Cylinder stocks are no better than they have been. Wax is holding its own. Gasoline showed a falling off in demand and price at the first of the week but it has regained all of its loss and the demand is now very good and the price fairly steady. Kerosene is better in demand and price despite unfavorable weather conditions. Fuel oil is holding up good. There has been a remarkable demand during the week for Pennsylvania motor oils and the refineries are kept very busy in order to meet the orders. Some of the refineries are said to be several days behind in their shipments.

EASTERN MARKET SOMEWHAT MILD BUT GENERAL TREND STILL FIRM

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church Street, New York

NEW YORK, Sept. 4.—The eastern refined oil market was somewhat mixed during the past week, although the general trend was still firm. Gasoline was spotty, local price cutting being more prevalent at service stations. This is probably due as much to the weather as anything, it having been rainy and cold for the most part during the last two or three weeks. Some factors found themselves a little overstocked, and are now cutting prices 1 or 2 cents a gallon below the regular tankwagon price of 21 cents. In Boston a cut of 2 cents was made by an independent marketer, but has not yet been met by competitors. It is stated that the latter have not yet reached a decision as to whether it would be advisable to meet the cut.

Although price cutting in the gasoline market is more prevalent now than at any time this year, it is too early to predict a general reduction in prices. As a rule, this local type of price cutting is taken too seriously by the trade. It is understood that statistically the gasoline station is sound, and that even if a general reduction takes place, it will be temporary. U. S. Motor gasoline is not easy to obtain in this territory, from the viewpoint especially of the jobbing trade. The latter has been holding off for a reduction for some time, and has been only recently stocking up on a larger scale. This action is said to have resulted in a slight stiffening of refinery prices. Following this, consumption has fallen off somewhat, and the jobbers are the ones to suffer.

This calls attention to the difficulty many marketers have (the big ones as well as the small) in keeping stocks of gasoline in line with the demands of their customers. It is often the case that they will stock up during hot weather, only to have the weather change as soon as they become well fixed as to supplies. Then they are apt to turn about and cut prices in order to move their stocks more freely, when, as their stocks are getting lower again, the weather turns warm. In other words, it is practically impossible to keep up with weather conditions, and the larger companies try to gauge things on a long-range, seasonal basis, rather than follow week to week changes. On a hot day, some sections have twice as big a consumption of gasoline as on a cool, wet day, and these two types of weather may follow each other on consecutive days. The writer is apt to credit reports of continued firmness in gasoline prices in the East in the belief that there are several weeks of warm weather still ahead.

Kerosene

The kerosene market continues strong. Water white kerosene is scarce, and brings 11 cents a gallon in bulk, the peak price of the year. There is a big demand for all grades, but especially water white, in anticipation of fall. Prime white is not so greatly sought after, but still cannot be had for less than 10¾ cents in tankcar lots. Cargoes are as scarce. Negotiations are understood to be under way between eastern marketers and California refiners for the purchase of kerosene for winter months' delivery.

Gas and Fuel Oil

Gas and fuel oil are strong. Gas oil is in better demand for local consumption. Gas companies are now coming into the market. Rumors have been current for some time that the price was to be advanced to 7 cents at refineries, as against 6¾ cents at present.

Diesel oil is in good demand at $2.50 a barrel, while bunker fuel oil is still held at $1.75. The Mexican supply is dwindling, temporarily at least, and indications are that local factors will be obliged to raise the price in the near future, for both Diesel oil and bunker fuel oil.

Cylinder oils are somewhat improved. Red and pale oils are unchanged.

Paraffin wax is slipping a little, due to a lull in purchasing. Prices are down ⅛ to ¼ cent a pound.

Petrolatum

Petrolatum is showing improvement, with prices up ⅛ to ¼ cent a pound. The market is not such as to cause any great amount of exultation, however.

Export Market

The feature of the oil export market was a record shipment of petroleum asphalt to Australia, comprising more than 20,000 bbls., consigned to various ports. It is understood the asphalt was shipped by The Texas Company, although this could not be confirmed. At any rate, it indicates the importance of the export market for that commodity, and calls attention to the trend toward road building in Australia. Road building, by the way, goes hand in hand with the use of the motor vehicle and consumption of gasoline and lubricating oil.

Outside of asphalt, there was a fairly heavy movement of lubricating oil and paraffin wax.

Shipments of both gasoline and kerosent fell off somewhat, but this change cannot be given any great significance.

The price situation in the export market continues firm, with a probable upward move in kerosene in sight. All important products are displaying a strong undertone.

Inquiries for bulk gasoline and kerosene from European buyers are firm, and activity of the principal exporters indicates preparation for a brisk movement over the next month or so. In fact the principal authorites believe the export market will be good the remainder of the year, as present consumption is eating into stocks, which will doubtless be partly replenished during the months of October, November and December.

The following table shows principal exports of petroleum and petroleum products from New York reported during the last three weeks (figures in gallons unless otherwise noted in parentheses):

	Week Ended		
	Sept. 1	Aug. 25	Aug. 18
Gasoline—			
Bulk	676,200	778,352	1,696,655
Barrels	.....	.....	241,500
Cases	840,900	1,234,600	2,047,830
Kerosene—			
Bulk	261,600	887,190	2,897,502
Cases	869,150	3,424,930	1,550,050
Gas oil—			
Bulk	756,500	.....	134,574
Lubricating oil—			
Bulk	65,600	.....	1,448,475
Barrels	1,123,050	1,174,800	834,400
Cases	116,950	177,500	225,810
Lubricating grease—			
Bbls. (lbs.)	1,424,250	137,700	376,650
Paraffin wax—			
Bags (lbs.)	1,527,240	1,843,600	1,059,520
Bbls. (lbs.)	426,075	591,850	1,206,475
Petroleum asphalt—			
Bbls. (lbs.)	10,768,725	293,075	1,641,600
Crude oil—			
Bulk	.....	.....	767,890

The foregoing figures include individual shipments of 500 bbls., 1,000 cases, or over.

Tanker Charter Market

The tanker market is active, but rates are a little soft, as indicated by several recent fixtures. This is especially true of the interconstal trade. Perhaps this is partly due to a temporary lull in demand, coupled with the reported placing of some additional vessels, formerly tied up, at the disposal of the trade.

New fixtures reported during the past week include the following:

Tanker Overbrook (Am.), 3,507 tons net, Gulf to New York, 25 cents, September loading.

Tanker Baldbutte (Am.), 3,836 tons net, Tampico to north of Hatteras, 33 cents, fuel oil, September loading.

Tanker Virginia (Am.), 5,048 tons net, Gulf to north of Hatteras, 25 cents, September loading.

Tanker Delaware Sun (Am.), 5,617 tons net, Gulf to north of Hatteras, 24 cents, September loading.

Steamer Arabian (Dan.), 185,000 cases of kerosene, Gulf to China, 29 cents, October loading.

Oil Receipts Drop

Estimated receipts by water of crude and refined petroleum at Atlantic Coast ports were 2,966,000 bbls., a daily average of 424,000 bbls. during the week ended September 1. This compares with 3,648,000 bbls., or 521,000 bbls. daily, the preceding week.

Imports for the week ended September 1 held up better than coastal receipts. The former aggregated 1,006,000 bbls., or 144,000 bbls. daily, against 776,000 bbls., a daily average of 111,000 bbls. Imports from South America (including Trinidad) for the week ended September 1 averaged 42,000 bbls. daily, against 45,000 bbls. daily the week before.

June appears to be the month in which receipts at Atlantic ports are at their height, due apparently to the activity of marketers on the Atlantic Coast, who stock up during this month in order to meet the summer demand. This was true in June of this year, when receipts averaged 635,000 bbls. daily, a high record. Subsequently, receipts have slumped off gradually.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports from the Gulf and Pacific Coasts of the United States, and imports, for the past three weeks; also monthly record for the last 12 months (figures in barrels):

	Week Ended		
	Sept. 1	Aug. 25	Aug. 18
Gulf Coast	235,000	325,000	410,000
Pacific Coast	45,000	85,000	67,000
Mexico	102,000	66,000	33,000
South America	42,000	45,000	28,000
Total	424,000	521,000	538,000

Daily Average by Months

	Gulf	Pacific	Mex.	So. Am.	Total
1926:					
Aug.	320,000	61,000	71,000	46,000	498,000
July	360,000	66,000	115,000	36,000	577,000
June	396,000	104,000	117,000	18,000	635,000
May	318,000	66,000	114,000	25,000	523,000
April	326,000	92,000	126,000	20,000	564,000
March	317,000	97,000	152,000	26,000	592,000
Feb.	332,000	73,000	104,000	18,000	527,000
Jan.	279,000	59,000	65,000	31,000	434,000
1925:					
Dec.	298,000	56,000	90,000	13,000	457,000
Nov.	259,000	36,000	80,000	12,000	387,000
Oct.	249,000	36,000	80,000	22,000	387,000
Sept.	306,000	66,000	66,000	10,000	448,000

The foregoing estimates are based on the carrying capacity of incoming oil-laden tankers.

APPEAL IN GUFFEY-GULF CASE

PITTSBURGH, Pa., Sept. 4.—Federal Judge F. P. Schoonmaker has granted an appeal in the suit of J. M. Guffey against the Gulf Production Co., to recover $180,000 with interest from 1901. Several months ago, Judge R. M. Gibson refused Guffey's motion for a new trial of the suit which has been tried twice in Federal Court here. The appeal, granted on a writ of error, will be heard by the Circuit Court of Appeals in Philadelphia. When the case was first tried in June, 1925, the jury awarded Guffey $348,695. In the second trial the court directed the jury to return a verdict in favor of the Gulf company. Guffey claims the amount is due him from the sale of oil and gas leases in Texas and Louisiana.

VINMONT SUCCEEDS PEELER

LOS ANGELES, Calif., Sept. 4.—Retirement of Gen. R. L. Peeler as president of the California Petroleum Corp. and subsidiaries is announced. He will be succeeded by Jacques Vinmont, chairman of the executive committee, who will assume the direction of both the financial and the operating policies of the company. Mr. Vinmont resigned in 1923 as a partner of Blair & Co., Inc., to become chairman of the executive committee of the California Petroleum Corp.

55,000-BBL. TANK AFIRE

HOUSTON, Tex., Sept. 4.—Lightning struck a 55,000-bbl. tank of the Humble Oil & Refining Co. in the Hull Pool Friday, causing a loss estimated at $20,000. The tank was only partially filled with crude, much of which was pumped out.

Use Pipe Still to Reduce Fuel Oil

Kanotex Installation Secures 75 Per Cent Recovery of Gas Oil. First Application of Gray Polymerizers With Jenkins Cracking Units

By C. O. Willson

A pipe still which reduces topped crude so that 75 per cent of the charge is available as gas oil charging stock for the cracking units, the first installation of polymerizers for treating gasoline in the vapor phase with Jenkins cracking equipment and a continuous treating installation, are three new phases of operation of special interest at the Arkansas City, Kans., refinery of the Kanotex Refining Co. The company during the past year has made several additions and improvements at its refinery, especially in equipment connected with its cracking operations. The plant at the present time has a skimming capacity of 7,500 bbls. daily with two 1,000-bbl. Jenkins units.

The pipe still furnishes the gas oil chargng stock for the cracking units from the topped crude or fuel oil bottoms of the skimming plant. Approximately 75 per cent of the charge is taken overhead as gas oil averaging 29.5 degrees to 30 degrees gravity. The polymerizers used in treating the cracked gasoline have only been in operation a month and the ultimate saving which will accrue from their operation is not known. It is estimated by F. A. Deering, plant superintendent, that the treating costs will be reduced at least 50 per cent. The new equipment for treating gasoline and rerun material in the liquid phase has also reduced treating costs.

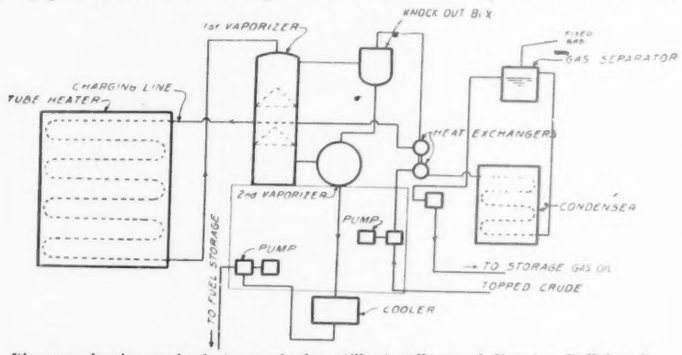


Diagram showing main features of pipe still at refinery of Kanotex Refining Co., operated to secure gas oil charging stock for cracking units from topped crude.

Simplicity in design is the outstanding feature of the pipe still for handling the topped crude. This simplicity in construction has been reflected in ease of operation with a minimum of maintenance during the year in which the unit has been in operation. An efficient heat exchange installation both for vapors and liquids has resulted in a fuel cost which averages about 1½ per cent of the charge to the still.

The accompanying sketch shows the main features of the unit. The topped crude from storage is charged to the unit by a 10 by 8 by 12 Simplex pump. The pump has a standby. The charge first passes to two Griscom-Russell exchangers. These exchangers, which weigh about five tons each, are 2½ by 14 feet.

The exchangers are an important feature of the installation doing almost as much work as the tube heater. The vapors from the knockout box are passed to the exchangers which are connected in series. Each exchanger provides for four passes of the liquid charging stock and one pass for the vapors. Five-eighths metal tubing is used in the exchangers.

The topped crude generally comes from the storage tank at a temperature of about 200 degrees Fahrenheit. Passing through the two-heat exchangers this temperature is increased to 600 degrees Fahrenheit when it leaves the last exchanger and enters the tube still. The latter consists of 3,600 feet of 4-inch tubing. Cast steel flanges are used as connections. The two bottom rows of tubes have removable plugs for cleaning. The furnace is arranged so that the air is preheated to a temperature of 250 degrees Fahrenheit. This preheating is accomplished by circulating the air with a fan securing a heat exchange with the flue gases.

First Vaporizer

The charge leaves the tube heater at a temperature of about 825 degrees Fahrenheit, discharging into a 7½ by 20-foot vertical vaporizer. The liquid is discharged at the top of the vaporizer passing over pans. Part of the charge is vaporized at this time. The liquid then passes out of the bottom of the vaporizer to a second 6 by 10-foot horizontal vaporizer where additional vaporization of the liquid takes place.

The residuum passes to a cooler and is then pumped to storage. A 5¼ by 3½ by 5 Duplex pump is used in handling the bottoms. Adjoining the pipe still is a battery of shell stills generally used in handling rerun stock. Arrangement has been made so that the hot bottoms from the last vaporizer can be passed to a Griscom-Russell exchanger and in this manner used to preheat the charge to the rerun battery. By this method, maximum heat exchange efficiency is secured in the operation of the pipe still.

As shown in the sketch the vapors from both the first and second vaporizers are passed to a common knockout box. This drum is 4 by 5 feet. The reflux from the knockout box returns to the second vaporizer. The vapors, as previously explained, pass to the two heat exchangers connected in series. A large part of the gas oil vapors are condensed in these heat exchangers.

The liquid and uncondensed gases are then forced through condensing coils. A small amount of fixed gases remain after passing through the condenser coils and these are removed in a gas separator. The liquid is then pumped to storage.

The quality of charging stock is not always the same and this naturally is reflected in the yields obtained. A representative charging stock is a 24-26 degrees gravity fuel oil of 45 degrees Fahrenheit cold test. With this type of charging stock, an overhead gas oil cut is taken averaging about 75 per cent of the charge. The residuum is from 15 degrees to 18 degrees gravity and is a good grade of fuel oil with a cold test of about 5 degrees Fahrenheit lower than the original topped crude. The capacity of the pipe still is 3,000 bbls. daily.

Treating in Vapor Phase

The Kanotex company early in the spring decided to install three Gray polymerizers or "towers" as they are commonly known to handle the gasoline output of its two Jenkins units. These units were recently connected to the cracking units and have been in consistent operation since. In the past so far as cracking equipment is concerned, the installation of these towers has been confined to the Cross process. Several installations with Cross equipment are now in operation and they are also being used in skimming and rerun operations.

The Kanotex management believed that they were applicable to the Jenkins process and the results to date have certainly borne out this belief. The principle involved in this type of treating equipment is generally known to the refining fraternity and need not be explained in detail here.

Briefly, it consists in passing the gasoline from the towers of the cracking unit while in the vapor phase to towers or polymerizers containing the clay treating medium. The contact of the clay and vapors results in the removal of impurities giving a finished gasoline except for sweeting treatment. The clay in this operation acts as an absorbing catalyst in removing the unstable properties of the gasoline. This method of treating does away with use of acid and other treating agents. It also does eliminates all rerun operations with a reduction in treating losses.

Several New Features

In addition to being the first use of the polymerizers with the Jenkins units, the Kanotex installation has several unique features which are of interest. In the first place it will be noted from the photo that the three polymerizers are almost as high as the top of the towers of the cracking units. In previous installations the polymerizers were placed so that the bottoms were only a few feet from the ground. The bottoms of the polymerizers at the Kanotex installation are 48 feet from the ground.

Installing the polymerizers at this height does away with the necessity of accumulator tanks and pumps. In passing the vapors through the towers from 10 to 15 per cent of the vapors are condensed as reflux in the polymerizers. At other installations it has been the practice to accumulate this reflux in a tank and with an automatic electric pump installation, return it to the bubble towers. Equipment for this type of installation is expensive and in operation usually requires the attention of one operator.

The Kanotex management decided to get away from this phase of the operation by having the polymerizers high enough so that the reflux flows by gravity back to the cracking unit. At the present time this reflux is returned to a 3-inch line to the reboiler which also handles the reflux from one of the towers of each Jenkins unit.

In the original Gray installations, the polymerizers consisted of an inner and outer shell. The vapors were first passed into the outer shell and then down through the inner shell which contained the clay treating medium. At the Kanotex installation there is no inner shell. The vapors simply enter the top of the polymerizer and pass out at the bottom with a trap arrangement to handle the reflux.

As shown in the photo the vapors are passed from the bubble tower of the Jenkins units to the battery of three Gray units. Through a double header arrangement, the vapors from either one of the Jenkins towers can be passed to any one of the three Gray polymerizers. The latter are supported by a steel structure reinforced for fire protection with concrete. One polymerizer handles the vapors from one cracking unit with the third polymerizer a standby to be used while one of the other two is being recharged.

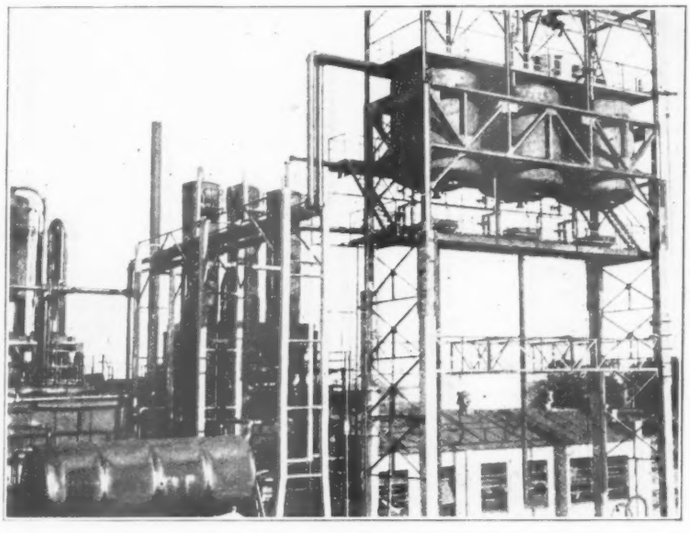
Sixteen-Ton Capacity

The polymerizers each have a capacity of 16 tons of 60-90 fullers earth. Monel metal screen is used to support the clay charge at the bottom. At the present time they are operated at a pressure of from 15 to 18 pounds.

No trouble is anticipated in either charging or cleaning the polymerizers. For charging, an electrically-driven hoist has been provided. This brings the fullers earth from the ground to the top of the steel structure and it is then distributed in buckets to the polymizers by means of a crane.

In cleaning, the manhead at the bottom of the polymerizer is removed and the fullers earth is dropped through a hopper and chute to small railway cars which carry it to the burners. With this arrangement for charging and cleaning very little labor is required.

It is not known at this writing just how much gasoline one charge will treat.



First installation of the Gray polymerizers with Jenkins cracking units.

Each of the polymerizers now in use has treated 1,000 bbls. of gasoline. It is believed that 1,500 bbls. can be treated in each unit before a recharge is necessary. No trouble has been experienced in operating the units.

Continuous Treating System

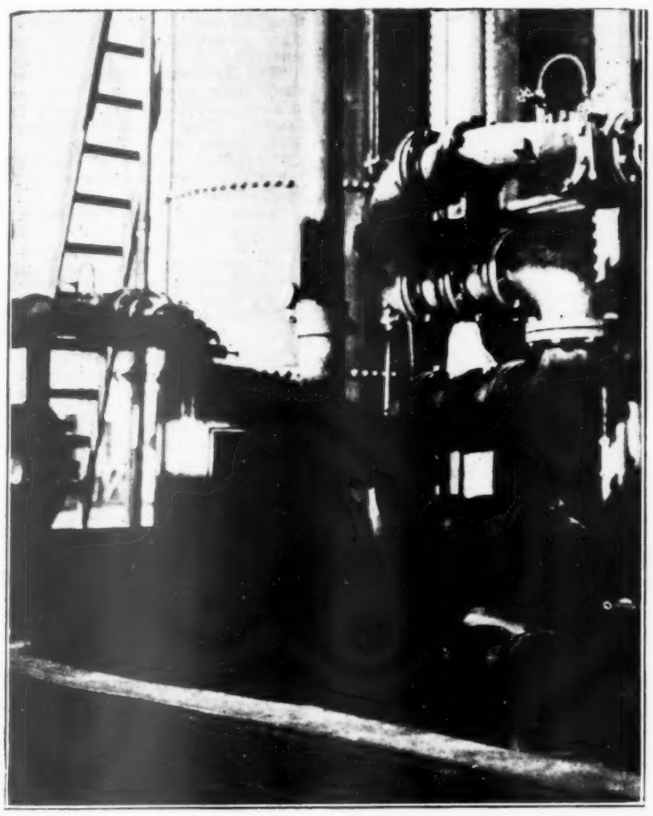
For treating gasolines other than those obtained in the cracking operation, a continuous treating installation was recently completed. Six 5 by 20-foot towers are used in the treating and settling process.

The pumping arrangement is of special interest. Centrifugal pumps with electric motor power are used to circulate the gasoline and chemicals. The pressure is maintained on the drum by means of a pump. The liquid is allowed to come in contact with the gasoline which has previously been treated with caustic and doctor solutions just before the gasoline passes through another set of plates.

The gasoline then passes to the third tower where part of the sulphur solution settles out. The fourth and fifth towers are used as a water wash. Water is sprayed into the top of the towers and settles out at the bottom. The sixth tower is for settling. The finished gasoline goes from this tower to storage.

Cast iron fittings are used in all connections. Flange to flange connections are used, no nipples being found in the installation. Another precaution taken to reduce maintenance troubles due to the corrosive action of the chemicals, is the installation of the Merco Nordstrom plug valves.

The installation has a capacity to treat 250 bbls. of gasoline per hour. The entire operation is automatic. Valve and pump adjustments regulate the flow of the gasolines, water and chemicals used. The flow of liquids is adjusted to meet the requirements of treating and no further regulation is required.



Part of continuous treating installation. Tower shown is the first of six units. Note the arrangement of orifice plates in the line emptying into the first tower and between the first and second towers.

pumps and motors are located in a pump house a few feet from the towers.

Only caustic and doctor solutions are used in treating. The caustic solution is circulated by a centrifugal pump, the liquid being picked up from the bottom of the first tower and forced into a 6-inch line with orifice plates. The liquid then returns to the bottom of the first tower.

After the circulation of the chemical has been obtained the gasoline is charged to the line containing the orifice mixing plates. The solution of gasoline and caustic soda is then emptied into the first tower. The caustic solution settles to the bottom where it is constantly picked up by a chemical pump and recirculated. The gasoline passes out near the top of the first tower to second set of orifice plates. The doctor solution of the second tower is handled in exactly the same manner as the caustic, the chemical being picked up in the bottom of the second tower and circulated through a second set of orifice plates. Only one pump is required to circulate the gasoline through the six towers. A 10-horsepower motor is used to circulate the gasoline with 5-horsepower motors for the caustic and doctor solutions.

The third treatment is a sulphur solution. This solution of sulphur and gasoline is made up and held in a drum made of 20-inch casing eight feet long. This drum which has a standby unit is located adjoining the third tower. A constant

Late Fields

(Continued from Page 39)

000 bbls. potential production, in the south fields, when it finished its No. 82 Cerro Azul and No. 81 Tierra Blanca. The first well is reckoned good for 20,000 bbls. at a sub-sea level of 1,424 feet; the second well is reckoned good for 10,000 bbls. at a sub-sea level of 2,086 feet. La Corona Petroleum Co., in the old Panuco Field (north), has two 500-bbl. wells in its Nos. 122 Delicias and 125 Salvasuchi finished at 1,670 and 1,750 feet respectively. In the Corcovado sector, Leonard and others' No. 6, Lot 1 Garruche, is good for possibly 1,000 bbls at 2,005 feet. National Lines' No. 105 Conteca is reckoned good for 2,000 bbls. at 2,095 feet, the Conteca being in the right of way. Ebano sector of the northern fields. Rains and attendant bad roads continue to hamper operations.

RUNS TO STILLS 67,392,000 BARRELS IN JULY, MAKING A NEW RECORD

The production of crude petroleum in the United States during the month of July, 1926, as compiled from pipeline runs reported to the Bureau of Mines, Department of Commerce, amounted to 64,972,000 bbls., a daily average of 2,096,000 bbls. This represents an increase of 2 per cent over the preceding month, but is a decrease from a year ago of 4 per cent. July, 1926, was the sixth successive month in which there was an increase in daily production.

Texas again was the chief factor in the rise in total output of crude petroleum. The discovery of deep sands in the old Spindletop Field and the continuation of much development work in the Panhandle Field were the chief causes for the greatly increased output of this State. Texas, with a daily production of 441,000 bbls. during July, seriously threatened Oklahoma as the second ranking producing State. Production in the latter State during July was at the rate of 480,000 bbls. per day, a slight decrease from the preceding month. California also registered a decline, though its output remained above the 600,000 mark.

Withdrawals from stocks, which have been very noticeable during the entire year, were again pronounced in July, when total stocks of crude petroleum east of California were once more reduced. These stocks on July 31, 1926, amounted to 278,184,000 bbls., as compared with 281,432,000 bbls. on hand the preceding month, a drop of 3,250,000 bbls. Stocks of light oil in California were materially reduced, but stocks of heavy crude, including fuel oil in that State, increased slightly.

Record Runs to Stills

Runs to stills of crude petroleum during July, 1925, set a record figure when 63,672,000 bbls. of domestic petroleum and 3,770,000 bbls. of foreign petroleum was refined in the United States.

Gasoline production for July set a new high figure for total, 24,927,000 bbls. though the daily average of 804,000 bbls. was a slight decrease from June. Domestic demand passed the billion gallon mark for the first time, its daily average of 779,400 bbls. being an increase over June of 1.3 per cent and over July, 1025, of 5.6 per cent. This heavy domestic demand was the chief cause of the material reduction in stocks since exports decreased. Stocks at the end of the month were 38,315,000 bbls., a decrease from the previous month of nearly 2,500,000 bbls.

Demand for kerosene and fuel oils dropped off materially and stocks of these commodities continued to rise. On the other hand, domestic demand for both lubricants and wax showed material increases and their stocks were only slightly increased.

The refinery data of this report were compiled from reports of 329 refineries, with an aggregate daily crude oil capacity of 2,688,000 bbls. These refineries operated during July at 81 per cent of capacity as compared with 81 per cent in June.

Supply and Demand

Total supply during July, 1926, amounted to 72,139,000 bbls., which when added to total withdrawals from stock, 5,126,000 bbls., gives 77,265,000 bbls. as the total demand for all oils. Subtracting exports of crude and refined products gives domestic demand as 67,034,000 bbls., a daily average of 2,162,000 bbls. Since domestic crude production was at the rate of 2,096,000 bbls. per day, there was a deficiency of 66,000 bbls. per day in domestic supply. On the other hand, in daily average in July, 1925, domestic production exceeded consumption by 151,000 bbls.

NORTH TEXAS AND PANHANDLE

FORT WORTH, Tex., Sept. 7—Roeser & Pendleton and Marland's No. 1-A Nail, C SW SW, Section 121, E. T. R. R. Survey, about 5 miles northwest of the Cook Pool in Shackelford County, topped sand at 1,298 feet, 300 feet of oil in the hole and 1,000,000 feet of gas. It is running 6-inch and looks like the opening of another good pool. Phillips Petroleum Co.'s No. 1 Winter, southwestern corner Jones County, rank wildcat, had good showing at 2,490 feet. They think it will make a good well. In Upton County Kirkwood's No. 1 Rank, in northeast corner Section 26, had a show of oil and gas at 3,810-20 feet and shut down. Texas Pacific Co.'s No. 1 Shirk, Section 5, Block 3, swabbed 155 bbls. at 2,163-85 feet. Humble Co.'s No. 1 Burleson, Section 100, swabbed 250 bbls. at 2,155-90 feet. In Winkler County Leigh Taliaferro Wentz & Cook's No. 1 Sealy, C SW, Section 28 Gunter Survey, topped salt at 1,035 feet. In Crane County Gulf Production Co.'s Nos. 1 and 3 McElroy, is pinched in to 250 bbls. because the Humble pipeline will take only that much.

Gulf Co.'s No. 21 Dial, Hutchinson County, made 1,590 bbls. natural, depth 2,895 feet. Gulf Co.'s No. A-3 Whittenburg, Mary Whitley Survey, an old well cleaned out, increased to 60 bbls. hourly. Phillips Petroleum Co.'s No. 2 Johnson-Barnum, Section 65, Block 46, shot with 120 quarts at 2,741-2,802 feet, made 2,000 bbls. Empire Co.'s No. 1 Whittenburg, Section 73, Block 46, shot with 125 quarts at 2,894-2,921 feet, is flowing 90 bbls. and 5,000,000 feet of gas.

The Prairie Oil & Gas Co. has purchased a half interest in Shamrock Petroleum Co. properties in Moore, Hutchinson, Gray and Collingsworth Counties for $1,500,000, half cash, remainder out of half oil. As soon as Shamrock gets $750,000 in oil, Prairie gets all production until it clears $750,000 above operating cost plus 6 per cent on investment. Shamrock Co. has to complete 15 wells now drilling then the Prairie will operate the property. The deal includes 2,280 acres in Hutchinson County and about 1,500 bbls. production.

NORTH TEXAS MARKET COMPARATIVELY QUIET

WICHITA FALLS, Tex., Sept. 4.—Despite a comparatively quiet week of trading, all north Texas refined markets continued firm to strong. Fractional advances were made in gasolines, marking the only changes in the price structure but quotations on all other products were steady.

During the last week in August considerable gasoline was ordered out of north Texas refineries. The removal of this material has placed these refiners in an especially good position which has enabled them to tighten up on quotations even during a lull in buying.

The U. S. Motor (58-60 437) gasoline was not offered below 11 cents, except in limited amounts for resale and higher gravities moved up in line although few sales were recorded. The export situation continues soft and the tightening in both the 60-62 400 and the 64-66 375 grades has been due largely to the strengthening of motor fuels. Natural gasolines showed practically no change.

Some scattered concessions in kerosene were reported but these did not disturb the general situation with the 41-43 water white material still hard to find. Offerings below 9½ cents were not the rule.

Fuel oil, gas oil and distillate prices also were unchanged with no developments of importance noted in trends of any of these products.

REFINING AND MARKETING

GEO. D. LOCKE HEADS EXPORT COMMITTEE

George D. Locke, vice president of the Barnsdall Refineries, Inc., has been appointed chairman of a committee of Mid-Continent refiners to investigate plans providing for a co-operative export outlet for gasoline and other refined products. The committee was appointed at a meeting in Tulsa last week attended by representatives of 18 refinery organizations.

The committee will investigate several propositions made to the refiners and submit one or more of the plans which appear workable. A general meeting will then be held for the further discussion of the matter first presented at a meeting in Kansas City three weeks ago.

It is understood the committee has under consideration two general plans. One provides for a separate export organization to have its own terminal facilities on the Gulf Coast and actively solicit the business of foreign buyers. The other plan would provide for a pooling of refined products suitable for export by Mid-Continent refiners, the combined material to be sold to a company or companies already engaged in the export business. It is said the latter plan has the most supporters at present.

Other members of the committee appointed at the Tulsa meeting are:

E. J. Marston, Fort Worth, Tex., vice president of Texas Pacific Coal & Oil Co.; D. E. Buchanan, Tulsa, vice president Chestnut & Smith Corp.; Walter H. Campbell of Western Oil Corp., Wichita Falls, Tex., and F. A. Pielsticker, El Dorado, Kans., vice president Skelly Oil Co.

BARNSDALL CHANGING PURCHASED STATIONS

The Barnsdall Refining Co., marketing subsdiary of the Barnsdall Corp., has started changing the bulk and retail stations purchased from the Waite Phillips Co. so that they conform to the Barnsdall design. The stations are being redecorated carrying the trade-mark name of Barnsdall products and the name of the Barnsdall Refining Co. Two of the Waite Phillips stations at Tulsa were changed and reopened as Barnsdall Refining Co. stations during the past week.

A total of 155 bulk and service stations in Oklahoma, Arkansas, Missouri and Kansas were turned over to the Barnsdall Refining Co. last spring when all the producing, refining and marketing properties of the Waite Phillips Co. were purchased by the Barnsdall interests. Since that time the marketing properties have continued to operate under the name of Waite Phillips Co. It is understood that the company expects to change the properties to Barnsdall stations as rapidly as possible.

The Barnsdall Refining Co. is now operating the 10 stations of the Interstate Refineries, Inc., at Kansas City, recently sold at a receiver's sale. These stations will be operated under the name of the Barnsdall Refining Co. The main offices of the company are now located in the Elmhurst Building at Tenth and Baltimore Avenue, Kansas City. M. G. Eitelman, vice president, is in charge.

TO BEAUTIFY STATIONS

DALLAS, Tex., Sept. 4.—Under the auspices of the Independent Service Stations Association a campaign for the beautification of service stations throughout Texas has been launched. A contest has just been completed in Dallas in which eight prizes were awarded for the most attractive stations.

SCATTERED TANKWAGON REDUCTIONS CUT DOWN AVERAGE FOR COUNTRY

The average tankwagon price of gasoline in the 50 representative cities of the country compiled by The Oil and Gas Journal on September 1 was 19.587 cents. This represented only a very slight decline of 0.11 cent from the average of August 1.

August really was a month of steady tankwagon prices, despite soft refinery markets. There were no general changes in tankwagon changes by any marketing company, the reduction in the average being due only to a few scattered local cuts. In fact, the past three months has been a period of practically stationary tankwagon markets.

It was during August of last year that tankwagon prices took a decided drop with the average posting on September 1 being 2.710 cents less than on August 1. In that month, however, refined markets suffered a reduction of 4 cents while August of this year gasoline prices declined only a cent.

On September 1 last year, the average price in the 50 cities was only 16.703 cents, which was 2.884 cents under the average on September 1, this year. Tankwagon prices generally have been maintained at a higher level this year than last.

The only tankwagon reductions in the 50 cities this August were: Louisville, Ky., 1 cent, effective August 17; Memphis, Tenn., 1½ cents, effective August 2. Dallas, Tex., 2 cents, effective August 21, and Charleston, W. Va., effective August 16.

There were no changes in gasoline taxes during the month, the last advance being in North Dakota, amounting to 1 cent, effective July 30. The average tax in the 50 cities now is 2.43 cents.

(Continued on Page 162)

Average Tankwagon Prices in Fifty Cities

September 1, 1925	16.703
October 1	15.808
November 1	15.528
December 1	15.763
January 1, 1926	16.133
February 1	16.213
March 1	17.267
April 1	18.517
May 1	18.487
June 1	19.607
July 1	19.697
August 1	19.697
September 1	19.587

NATIONAL PETROLEUM ASSOCIATION ANNOUNCES CONVENTION PROGRAM

Something unusual in the way of a feature address for an oil men's gathering has been arranged for the annual convention of the National Petroleum Association at Hotel Traymore, Atlantic City, September 15, 16 and 17. This will be an illustrated talk by Kermit Roosevelt on his recent hunting trip to Central Asia. Mr. Roosevelt will be the principal speaker at the annual dinner.

Special attention also has been given to the program for the convention proper and a number of leading men in the industry will deliver important addresses on various phases of the refining and oil industry. The annual election will take place on September 16. The program will include both general and technical subjects, some of which are:

Board of Trustees' Meeting

The board of trustees will meet in the room of Fayette B. Dow, Hotel Traymore, at 10 a. m. (daylight saving time), Wednesday, September 15.

Wednesday Afternoon, September 15

2 p. m. (daylight saving time).

Opening address: "Products and By-Products of Association Work"—O. P. Keeney, president.

Reading of Minutes. (Note: The minutes will be read at the trustees' meeting and the reading at the general meeting will be dispensed with except as to such matters as any of the trustees or members may desire to bring to the attention of the meeting.) Herbert C. Eaton, recording secretary.

Appointment of nominating committee.

"The Association's Finances"—G. B. Hunter, treasurer.

"The National Petroleum Association 20 Years Ago and Today"—C. D. Chamberlin, general counsel.

"Research and Development in the Oil Industry"—Frank A. Howard, president, Standard Development Co.

The Fire Marshals—

A. "Who and What They Are"—R. A. Wotowitch, trustee in charge, Department of Welfare and Insurance.

B. "New Lessons From an Old Hazard"—Houston Dunn, managing director, The Fire Marshals' Association.

C. "The Fire Alarm Rings"—Harry R. Lewis.

"A Good Year"—Fayette B. Dow.

Wednesday Evening

8:15 p. m. (daylight saving time.)

Theater Party—R. A. Wotowitch in charge. Ladies are invited. (Seats have been reserved but tickets must be purchased before 5 p. m.)

Thursday Morning, September 16

9:30 a. m. (daylight saving time.)

B. B. Stroud, presiding. Report of nominating committee. Election of officers and trustees.

"The Association's Adventure in Co-operative Engineering"—B. B. Stroud, trustee in charge, department of manufacture.

"What I Learned From a Study of 20 Boiler Houses"—Herbert A. Ross.

Discussion: Every member who has participated in co-operative purchase of engineering services is invited to discuss the results frankly.

"Cost Accounting's Relation to Manufacture"—P. S. Tarbox, trustee in charge, department of economics, accounting and statistics.

"Reducing the Costs of Manufacture"—Jacob France, president, Mid-Continent Petroleum Corp.

"Modern Stills"—H. S. Bell.

Board of trustees' meeting: The newly elected board of trustees will meet at lunch, Hotel Traymore, at 1 p. m. (daylight saving time.)

Thursday Evening

7 p. m. (dalight saving time.)

Shore dinner at Hackney's.

1. "As a Token of Our Friendship"—Anonymous.

2. "Experiences in Central Asia," illustrated by stereopticon and moving pictures.—Kermit Roosevelt.

Fred G. Clark in charge. (Tickets must be purchased before 5 p. m. Wednesday. Buses will leave Hotel Traymore at 6.45.) Ladies are invited.

Friday Morning, September 17

E. M. Lyons presiding.

9:30 a. m. (daylight saving time.)

"Better Trade Relations"—E. M. Lyons, trustee in charge, department of trade and commerce.

"A Traffic Department That Functions"—Frank B. Fretter, trustee in charge, department of traffic and transportation.

"The Interstate Commerce Commission's Order for a General Investigation of Rates on Petroleum in Central, Trunk Line and New England Territories"—Willis Crane, traffic attorney.

"The New Policies of the Federal Trade Commission in Relation to Business"—Hon. W. E. Humphrey.

"Avoidable Misunderstandings in Oil Tests"—Fred G. Clark, trustee in charge, department of standards and tests.

"Discriminatory Legislation Against the Oil Industry"—Sheldon Clark, trustee in charge, department of legislation and litigation.

Friday Afternoon

1 p. m. (daylight saving time.)

Luncheon and golf tournament at the Sea View Golf Club. A. C. Woodman in charge of luncheon; S. P. Worthington in charge of golf tournament. Presentation of prizes. Ladies are invited.

Committee in charge of entertainment at annual meeting: Fred G. Clark, chairman; A. C. Woodman, R. A. Wotowitch, S. P. Worthington.

SUPERIOR OIL BUYS GRANDFIELD PLANT

The Superior Oil Corp. last week purchased the pro[illegible] the Oklahoma-Texas Oil & Renn[illegible] court sale held at Grandfield, Okla. The consideration was $145,000. The buyer was one of the creditors of the company.

The properties involved consisted of a 2,500-bbl. skimming plant at Grandfield, a few small wells and acreage. The plant at Grandfield has been shut down for about two years. The new owners have not announced what disposition will be made of the plant. It is not expected that the company will operate it. The producing properties will be added to other holdings of the company in that section.

The Superior Oil Corp. is a subsidiary of the Atlantic Oil Producing Co., a subsidiary of the Atlantic Refining Co.

TO PUSH SALE OF OIL BURNERS

CHICAGO, Sept. 4.—At the meeting of the Chicago Oil Men's Club, at which about 40 active oil men were present, the special feature was a plan for advertising the use of oil burners and fuel oils. It was outlined by E. P. Faley, president of the Chicago Oil Burner Association. The plan was favorably received by the oil men and it was agreed the oil industry should bear its share of the cost of the campaign. A committee was appointed headed by J. A. Achambault of the Pennsylvania Oil Co. of Evanston to secure the pledges of the oil companies. The plan consists very largely of billboard advertising in the city and immediate suburbs. There was no mention made of the possibility of any scarcity of burner oils this season.

PLANT FOUNDATIONS LAID

AMARILLO, Tex., Sept. 4.—Foundations have been laid for the natural gasoline plant being erected in the Panhandle Field by Coyle and McGuire for the Gas Chemicals Corp., of Denver, Colo. The plant will cost $1,000,000 and will be in operation by November 1.

TOWERS

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STEEL PLATE

Refinery Equipment

built by

GRAVER

Graver Builds

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- *Riveted*
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- *Structural Supports*
- *Tower Tanks*
- *Standpipes*
- *Any Size Tanks Erected Anywhere*

Refinery Equipment

Jenkins Cracking Process

Stacks-Breechings

General Steel Plate Construction

Water Softeners
- *Hot Process*
- *Cold Process*
- *Zeolite*
- *Household*

Filters—*Pressure*

Purifying Systems *for* **Swimming Pools**

GRAVER Corporation *Founded 1857*

EAST CHICAGO, INDIANA

NEW YORK Grand Cent. Term. | CHICAGO Steger Building | TULSA Atlas Life Bldg. | HOUSTON West Building

Brief Items for Plant Operators

Lion Oil Refining To Build By-Product Plant at Refinery

The Lion Oil Refining Co. has started construction of a by-product plant at its El Dorado, Ark., refinery for the manufacture of material used in making rubber, asphalt paints, oils and other special products. The first unit of the plant which will cost approximately $125,000 will be completed and in operation in about 90 days, according to an official announcement. This unit will have a capacity of 500 bbls. daily. It is planned to build two additional units.

The decision to build the by-product plant follows several months of research work directed by Sylvester Dayson, general manager of the refinery. This research work established the fact that the heavy Smackover crude with which the Lion refinery operates was peculiarly suited for the manufacture of the by-products.

The principal product of the plant will be what is generally termed a rubber asphalt used to blend with raw rubber in the manufacture of finished rubber products. It is said that the asphalt is widely used in the manufacture of phonograph records, radio fronts, telephone receivers, combs, fountain pens and other products requiring a similar type rubber.

The plant will also have a large output of asphalt suitable as a base for certain types of paint. High-grade road asphalt material will be another product of the plant. A lubricating oil product will also be obtained. When all three units are completed the plant will have a larger capacity than any of the five similar plants now in operation in the United States.

Commenting on the decision to build the plant an official announcement of the company said in part:

"Mineral rubber is not a new product, but it is only within the past year or two that its value as a compound with crude rubber in the manufacture of finished rubber products has been understood. It is now used very extensively in the manufacture of mechanical rubber goods in proportion of from 10 to 60 per cent of the rubber content of the finished product.

"The recent tremendous advance in the price of crude rubber has had much to do with the development of mineral rubber and in its use as a rubber mix. There is an increasing demand for the product at prices ranging from $40 to $75 per ton—based on quality. Samples of crude oil with an asphalt base, such as is produced in this district, were procured from various oil fields in the United States and analysis demonstrated that Smackover crude is much superior, taking into consideration the adaptability for oxidized products which after refining has a rubber-like characteristic."

CRAIG TO CELEBRATE STARTING OF REFINERY

The Texas Company is making preparations for a celebration at Craig, Colo., when the fires are lit under the stills at the refinery now being built there by the company. This event is expected to be about October 1 and the first gasoline taken off will be sent to various cities in Colorado in commemoration of the event. The Texas Company expects to market practically all of the product from the Craig refinery in the towns and cities of northern Colorado and the crude supply will come from the Moffat wells and the new shale oil field at Tow Creek, near Steamboat Springs.

MID-CONTINENT REFINERS PREPARE TO OPERATE ON PANHANDLE CRUDE

Several refineries in the Mid-Continent Field have either started operating with Panhandle crude or are making preparations to do so. The low freight rates on tankcar shipments which became effective from the Panhandle to Oklahoma and Kansas points early in August have resulted in greater interest among refiners in the two states as to the possibilities of Panhandle crude. It is certain that the tankcar movement will be largely increased as soon as the Santa Fe extension from Panhandle, Tex., to the Hutchinson County Field is completed the latter part of this month.

The largest refiner at the present time is the Marland Refining Co. The company has been experimenting with the crude for several weeks. It is understood the company now believes it has solved all its operating difficulties including the treating of the gasoline. The Ponca City, Okla., refinery at the present time is refining about 7,000 bbls. daily of the Panhandle crude. This will shortly be increased to 15,000 bbls. daily. The company is securing satisfactory results in cracking the gas oil yield with Cross equipment.

The Derby Oil Co. has started refining the crude at its Wichita, Kans., refinery. The Derby company has considerable production in the Panhandle Field all of which will be refined at the Wichita refinery. The Globe Oil & Refining Co. at its Blackwell, Okla., refinery recently refined 5,000 bbls. of the Panhandle crude. The crude was charged to its stills in the same manner as its Oklahoma crude. The company was able to treat its U. S. Motor gasoline to meet the usual specifications.

The Arkansas City Refining Co. at Arkansas City, Kans., is also obtaining a part of its crude supply from the Panhandle Field. This company expects as does the Marland Refining Co. to use the fuel oil bottoms from its skimming operations as charging stock for its Dubbs cracking units.

The Humble Oil & Refining Co. has started refining the Panhandle crude at its Baytown, Tex., refinery. It is reported that the Skelly Oil Co. and the White Eagle Oil & Refining Co. will also shortly start refining the crude at their refineries. Both companies have producing properties in the Panhandle Field.

M. I. T. ESTABLISHES COURSE AT REFINERY

A field station of the new course in fuel and gas engineering and the School of Chemical Engineering Practice has been established at the Bayonne refinery of the Tide Water Oil Co. by the Massachusetts Institute of Technology. Last October the institute inaugurated a course in fuel and gas engineering, the purpose of which is to afford graduate engineers an opportunity for specialized training in processing and utilization of fuels. This course consists of nine months' theoretical training at the institute followed by six months' field work at the Lackawanna plant of the Bethlehem Steel Co., the Iroquois Gas Co., The Cambridge Gas Light Co. and the Bayonne refinery of the Tide Water Oil Co.

The successful operation of the School of Chemical Engineering Practice has justified the method of teaching certain phases of chemical engineering at field stations rather than in the institute laboratories. A member of the institute faculty is in residence at each station. The student receives no compensation from the co-operating company and therefore his work may be planned to have the maximum educational value. The field work consists, for the most part, of plant investigations of the normal production processes and tests of the regular plant equipment. This work is carried on in close co-operation with the technical staff of the plant and much of it is done on problems at the specific request of the executives of the co-operating companies. The training given in the graduate course in fuel and gas engineering is based on these same methods.

V. R. NEWLAND DIES

LAWRENCEVILLE, Ill., Sept. 4.—V. R. Newland, assistant manager of operations at the general offices of the Indian Refining Co. of Lawrenceville, was killed when the automobile in which he and his family were returning from a vacation skidded and overturned near Winchester, Ind. His wife, son and daughter were uninjured. Mr. Newland had been with the Indian Refining Co. 14 years.

NEW REFINERY AT HAVRE

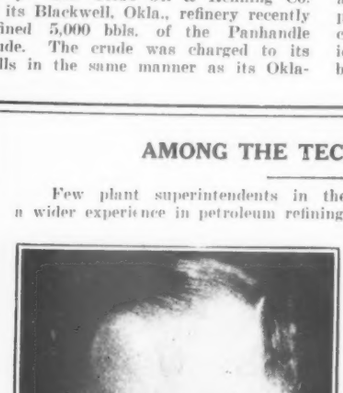
CASPER, Wyo., Sept. 4.—Materials and equipment already have been ordered for the new refinery to be built at Havre, Mont., according to information received here. The plant will be erected by Boris A. S. Aronow, northern Montana oil operator. Plans for the refinery were announced several months ago and Mr. Aronow has just returned to Havre from the East to rush the construction of the plant.

TO INSTALL FILTRATION PLANT

CHICAGO, Sept. 4.—The Roxana Petroleum Corp. is installing at its Wood River refinery a contact filtration plant stated to be the fourth of this design in this country. The plant will be used for the filtration of overhead stocks.

AMONG THE TECHNICAL MEN

Few plant superintendents in the Mid-Continent Field have had a wider experience in petroleum refining than K. J. Smith, superintendent of the Eldorado, Kans., refinery of the Skelly Oil Co. Born in Canada, his first employment at a refinery was with the Canadian Oil Co. in 1904. He was employed as a gauger and tester at the company's complete refinery located at Petrolia in western Ontario.



K. J. Smith

He came to the United States in 1908 as superintendent of the refinery of the Consumers Mutual Oil Co. at Blue Island, Ill. He continued in charge of the operations of this company until 1913, when he became superintendent of a refinery for the Venezuela Oil Fields Co., Ltd., located on the island of Trinidad.

Mr. Smith returned to the United States in 1917 and located at Eldorado. W. G. Skelly, at present president of the Skelly Oil Co., with associates had just completed the building of a small skimming plant handling crude from the Eldorado fields. Mr. Smith became connected with the organization which was known as the Midland Refining Co. as assistant superintendent of the refinery. Later he was made superintendent of the plant. The Midland company was absorbed by the Skelly Oil Co. about two years ago.

With Mr. Smith as superintendent the refinery operations of the company have expanded the original 2,500-bbl. skimming plant until now the refinery is the largest in Kansas with a skimming capacity of 15,000 bbls. daily and a cracking capacity of approximately 7,500 bbls. daily. The company expects to further expand its cracking facilities in the immediate future.

Recent Patents

1,591,728. Process of Separating and Purifying Oil. Walter Edwin Trent, Washington, D. C., assignor, a corporation of Delaware. Filed August 11, 1920. Serial No. 402,901. Seven claims. (Cl. 196—4).

7. The process of separating hydrocarbon oil from water and other impurities intimately associated therewith, comprising commingling said hydrocarbon with a comminuted carbonaceous mineral fuel to cause the oil and carbonaceous fuel to combine and form a substantially plastic amalgam rejecting water and impurities originally associated with the oil.

1,591,744. Method of Treating Hydrocarbons. Roy Cross, Kansas City, Mo. Filed December 22, 1921. Serial No. 524,290. Two claims. (Cl. 196—4).

1. A method of dehydrating hydrocarbon oil which consists in intimately mixing it with bentonite and separating the treated oil from the bentonite.

(Additional Patents on Page 186)

Oil Securities Strong and Active

Gulf Oil, Union Tank Car Common, Phillips Petroleum, Shell Union and National Supply Reach New Highs

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church Street, New York

NEW YORK, Sept. 6.—Oil securities were strong and active during the past week. Sensational upward moves were registered in Gulf Oil, which rose 9 points in a day to a new high for all time of 95, and Union Tank Car common, which advanced to 113, up about 20 points in the past two weeks. Phillips Petroleum, Shell Union Oil and National Supply were outstanding features, reaching new highs. Prairie Oil & Gas and Ohio Oil were also actively purchased at advancing price levels.

Associated Oil

The Associated Oil Co. has declared an extra dividend of 40 cents a share, payable October 25 to stockholders of record September 11, and regular quarterly dividend of 50 cents, payable September 25 to stockholders of record September 11.

Borne Scrymser

The directors of the Borne Scrymser Co. have approved the plan to issue four new $25 shares for each $100 par value share held. Distribution of new shares will be made to stockholders of record September 25.

The company declared an extra dividend of $4 and regular semiannual dividend of $4, both payable October 15 to stockholders of record September 25. The dividend is payable on the present stock.

Gibson Oil

The balance sheet of the Gibson Oil Co. as of June 30, 1925, follows:

Assets: Cash, $57,246; accounts receivable, $369,078, notes receivable, $11,032; inventories, $22,952; cash deposits and advances on purchases, $10,205; real estate, buildings, equipment, etc., $272,285; leaseholds, $8,739,630; other assets, $274,907; deferred charges, $62,490; total, $9,819,825.

Liabilities: Accounts, notes payable, etc., $366,620; accrued interest, $1,445; lease bonus payable, $12,867; items payable in oil, etc, $56,314, suspense account, $2,347; capital stock (represented by 926,946 shares), $926,946; surplus, $8,453,286; total, $9,819,825.

Indian Refining

The Indian Refining Co. and subsidiaries report for the six months ended June 30, 1926, net profit of $307,864, after interest, depreciation, etc., equivalent to $13.40 a share earned on $2,296,400 7 per cent preferred stock. Allowing for regular preferred dividends, balance is equal to 28 cents a share (par $10) on 785,068 shares of common stock. This compares with $455,135, or $19.81 a share on the preferred, and 47 cents a share on the common, in the first half of 1925. Accumulated dividends on the preferred stock amount to 31½ per cent as of June 1, 1926.

The consolidated income account for the six months ended June 30, 1926, follows:

Net sales	$11,610,734
Costs and expenses	11,099,753
Balance	$ 510,981
Other income	176,912
Total income	$ 687,893
Interest, etc.	380,029
Net profit	$ 307,864
P. & L. credits (prior years)	28,801
Total net profit	$ 336,665

The consolidated general balance sheet of the Indian Refining Co., Inc., and subsidiaries as of June 30, 1926, compares as follows:

Assets	1926	1925
*Refineries, pipelines, stations, etc.	$14,376,610	$13,119,805
Havoline trademark	850,000	
Cash	508,859	529,936
Accts. & notes receivable	1,696,764	1,936,439
Inventories	2,614,517	2,855,052
Prepaid opr. exp.	270,065	254,290
Securities owned	15,602	9,539
Sinking fund dep.	222,413	402,807
Deferred charges	136,804	184,620
Total	$20,691,634	$19,592,488
Liabilities		
7% pfd. stock	$ 2,296,400	$ 2,296,400
Common stock	†7,850,680	7,850,380
Funded debt	1,902,000	2,594,768
Bank loans	1,000,000	
Accts. payable	2,432,343	2,063,606
Othe current liab.	249,251	238,180
Accrued interest	56,293	18,141
Reserves	787,342	864,749
Purchase contracts	246,469	
Deferred credits		6,128
Surplus	3,870,865	3,659,836
Total	$20,691,634	$19,592,488

*After depreciation. †Represented by 4,172 shares of old $100 par stock and 743,348 shares of new $10 par stock.

National Supply

National Supply Co. is said to have had the biggest month of its history in July. Earnings for the year are estimated at around $12 a share. The company earned more than $5 a share in the first six months, while dividend requirements at the current rate are only $4 for the entire year.

New England Oil Refining

The New England Oil Refining Co. for the year ended December 31, 1925, showed balance of $1,653,738 available for interest and depreciation, comparing with $1,149,752 in 1924. Deficit after interest, depreciation, etc., was $1,138,551 against $1,618,713 in the preceding year.

Oil Well Supply

The report of the Oil Well Supply Co. and subsidiaries for the six months ended June 30, 1926, shows net income of $929,532 after depreciation, federal taxes, etc., equivalent after allowing for dividend requirements on the 7 per cent preferred stock to $2.11 a share (par $25) earned on the outstanding 325,000 shares of common stock. This compares with $718,870, or $1.46 a share, on the present share basis in the first six months of 1925.

The consolidated income account for the six months ended June 30, 1926, compares as follows:

	1926	1925
Gross profits from operations	$3,208,716	$2,787,849
Expenses	2,077,569	1,722,284
Depreciation	210,750	220,964
Profit	$ 920,397	$ 844,601
Other income	230,313	134,242
Total income	$1,150,710	$ 978,843
Federal taxes	129,824	100,493
Other deductions	91,354	159,480
Net income	$ 929,532	$ 718,870

The consolidated balance sheet of the Oil Well Supply Co. and subsidiaries as of June 30, 1926, follows:

Assets: Cash, $1,446,778; cash deposit with trustee, $12,912; Liberty bonds $521,251; notes and accounts receivable, $9,126,371, inventories, $13,135,758; prepaid expenses, $129,191; balance due from employes $32,160; investments, $337,455, property, plant and equipment, less depreciation, $6,693,847; deferred charges, $191,427; total, $31,627,150.

Liabilities: Accounts payable, $3,544,372; notes payable, $600,000; due from officers and employes, $3,917; provision for federal taxes, etc, $341,705; dividends payable, $283,775; bond sinking fund installments, $150,000, first mortgage bonds, $1,800,000; reserve for contingencies, $721,851; preferred stock, $6,930,000, common stock (par $25), $8,125,000; surplus, $9,126,530; total, $31,627,150.

Pan American Petroleum

The Pan American Petroleum & Transport Co. and its owned and controlled companies, for the six months ended June 30, 1926, shows consolidated net profit of $15,335,616 after interest, depreciation, depletion, federal taxes, etc. equivalent to $5.56 a share earned on the average amount of common stock outstanding during the period. This compares with $16,539,000, or $6.02 a share, on the common in the first half of 1925.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE PRICES

Stocks—	Par	Clos. Quot. Sept. 3	Aug. 30	1926 High	1926 Low	1925 High	1925 Low	1924 High	1924 Low
Amerada Corp.	..	31	31⅝	32⅞	21⅝	..	..	..	..
Atlantic Ref., com.	100	112¼	115	128⅝	97	117½	95½	140½	78½
Barnsdall "A"	25	28¾	27⅝	33½	23½	33½	18⅝	29½	14
California Pet. com.	25	33⅛	33	38⅛	30⅝	34⅝	23⅞	29	19⅞
Houston Oil	100	62⅜	63¼	72	50½	85	59	82½	61
Independent Oil & Gas	..	25⅛	25½	34	20¼	41⅜	13½	16¼	5⅜
Indian Refining	10	9⅜	10	13⅜	9½	14½	5½	7	3⅜
Lago Oil & Trans.	..	22	22⅜	24½	19¼	..	..	..	..
Louisiana Oil	10	16⅜	17	19⅝	12	23⅜	13⅜	..	..
Maracaibo	..	23½	24⅛	28⅞	20⅜	35⅛	20⅜	37¼	25⅜
Marland	..	59⅜	59⅞	63⅝	49¼	60⅛	32⅜	42	29
Mexican Seaboard	..	*11	11¼	13⅜	6	22½	9	26⅜	14⅛
Mid-Continent Pet.	..	32⅝	33⅛	41	25⅝	38	25⅜	40¼	22⅝
National Supply	50	70¾	67¼	71	55½	71	54⅝	72½	54
Oil Well Supply	25	34	*33½	36	30	38	33⅜	..	..
Pan. Amer., B.	50	68½	69½	78⅝	56⅛	83⅞	59½	65	44½
Pan. Amer., Western B.	..	37½	38¼	46	34	49⅜	37⅛	..	..
Phillips Pet.	..	52¼	49	52⅝	42½	47⅛	36⅓	52¼	28½
Producers & Refiners	50	14⅛	13⅝	17½	11	32⅝	12½	32½	29⅜
Pure Oil, com.	..	27⅝	28	31	25⅝	33⅜	25⅛	30¼	20
Royal Dutch, N. Y., sh.	13.40	51	52	57⅝	49⅝	57⅜	48¼	59½	40⅝
Shell Transport	10	*44	*44	48⅝	42	49	39⅜	42	33
Shell Union, com.	..	30⅛	30¼	30⅜	24	28⅜	21⅝	22½	15⅜
Simms Pet.	10	18⅝	19	28⅝	16⅜	28½	17⅜	24	10⅝
Sinclair Consolidated, com.	..	21¼	21⅝	24⅞	19⅝	24⅞	17	17½	15
Skelly Oil	25	35⅜	35⅝	37⅛	27	32½	21⅜	29	17⅛
Standard of California	25	63	62½	63½	54	67¼	51½	68½	55½
Standard of New Jersey, com.	25	43⅜	43¾	46⅝	40¼	47½	38⅝	41½	33
Sun Oil Co.	..	32⅜	31	41⅝	30⅝	43⅜	34¼	..	..
The Texas Company	25	56½	57	58	48	55	42⅜	45⅝	37⅜
Texas Pacific Coal & Oil	10	15⅜	16¼	19½	12¼	23⅜	11	15¼	8¼
Tide Water Oil	25	30½	31½	39¼	30⅛	..	..	..	..
Transcontinental	..	4½	4⅝	5½	3	5⅜	3½	6½	2⅝
Union Oil of California	25	53	55	58	37¼	43⅝	33⅛	39	35½
Union Tank, com.	100	113	104¼	113	84½	1134	118	132⅞	94
White Eagle Oil & Refining	..	26½	26¼	29⅜	25⅛	31⅜	25⅝	29⅝	23⅛
Standard Oils									
Anglo-American Oil	£1	17¾	18½	19⅜	16½	26⅜	17½	18⅝	14⅝
Borne Scrymser	100	†285	*275	295	226	240	205	164	150
Buckeye Pipe Line	50	46½	*47	59½	47⅝	72	63½	85½	51
Cheseborough Mfg. Co.	25	73	*73	72¾	63	74	48¼	62½	29¼
Continental	10	21	21¼	25⅞	19¼	31⅛	21⅞	..	..
Crescent Pipe Line	25	*16	*16	16	14½	17½	10	20	11⅜
Cumberland Pipe Line	100	109	*109	137	108	156	128	148	108
Eureka Pipe Line	100	*48	49	63¾	47⅝	96	61¼	105	74
Galena Signal com.	100	*49	49	52½	47¼	68½	23½	69⅝	62½
Humble Oil & Refining Co.	25	61⅞	61⅜	68⅛	52	99	52½	43⅜	36
Illinois Pipe Line	100	134	134½	144	131	154½	124	161	123
Imperial Oil, Ltd.	..	37	37½	38⅜	32½	39½	27½	119	99
Indiana Pipe Line	50	*58	*59	68	58	84	87½	100	66
International Pet. Co.	10	34⅜	34½	35½	28⅜	35⅜	22⅛	34⅜	16⅞
National Transit Co.	12.50	*14½	*13⅝	20⅜	14½	25½	16½	25⅜	20⅝
New York Transit	100	*34	35	51½	33¼	79	50	97	54½
Northern Pipe Line	100	*72	*73	80½	68	88	67½	107½	72
Ohio Oil Co.	25	63¼	59¼	67⅜	55⅜	75¼	60	79½	53
Penn.-Mex. Fuel	25	*18⅛	*18½	24¼	15	44	19	35⅝	27
Prairie Oil & Gas	25	53⅝	51¼	60¼	48	65½	45⅞	269	193
Prairie Pipe Line	100	125	125	127	122½	129⅜	105	111	100
Solar Refining Co.	100	*205	205	212	184½	259	200	240	170
South Penn Oil	25	38½	38	50	35	1197	139	176	117
Southwest Pa. Pipe Line	100	*52	52	56	47½	87	56	89	68
Southern Pipe Line	50	*24	*25	74½	61½	103	63	100	80½
Standard of Indiana	25	64½	63⅜	70½	61⅝	76¾	59½	69⅝	54⅛
Standard of Kansas	25	22	20	26⅝	21	46	30¼	50½	32½
Standard of Kentucky	25	*124	123	134⅝	108	137	114⅝	121⅞	101
Standard of Nebraska	25	*18½	*17½	151¼	142	270	231	262	198
Standard of New York	25	33¼	33	47¼	30⅝	48⅝	40	48	37⅜
Standard of Ohio, com.	100	368	*298	362	292½	369	338	337½	277
Swan & Finch, com.	25	17½	*17½	21	18	27	12	28	20
Vacuum Oil	25	101	101½	109⅜	94⅛	109½	80½	83½	59½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	95	85¼	95	82½	98¼	63½	67⅝	56
Tide Water Associated	..	*24	24⅜	27	21	..	..	..	..

*Bid, no sales. †Old stock. ‡New stock.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Sept. 3	60.16	Aug. 2	59.76	June 28	60.17	
Aug. 30	59.86	July 26	58.44	June 21	59.91	
Aug. 23	59.06	July 19	59.45	June 14	59.49	
Aug. 16	59.24	July 12	59.43	June 7	58.92	
Aug. 9	59.35	July 2	59.38	May 28	59.81	

RAMSEYS DRILLING 3 IN OKLA. PANHANDLE

OKLAHOMA CITY, Okla., Sept. 6.—Another 10,000-acre block of State grazing land out of the 200,000-acre reservation in Cimarron County has been leased for oil and gas purposes to W. R. and W. E. Ramsey, Oklahoma City oil operators. They contracted to complete a well to 3,000 feet within one year unless an impenetrable formation is encountered. They agree that the location shall not be within 6 miles of another well they are drilling on a similar block. This is the third block of that size in Cimarron County these men have leased.

GAS MERGER BONDS ON SALE WEDNESDAY

NEW YORK, Sept. 7.—A consolidation of natural gas companies in Oklahoma, uniting the Oklahoma Natural Gas Co. ,the Kingwood Pipe Line Co., the Southern Gas Co., and the Okmulgee Gas Co., will be financed tomorrow through the public sale of a $6,000,000 bond issue for the enlarged company, known as the Oklahoma Natural Gas Corp.

The issue will take the form of 15-year 6½ per cent debentures to be offered at a price of 99 by White, Weld & Co., and Blythe, Witter & Co.

The capital structure of the new company also will include $15,000,000 first mortgage bonds, $2,100,000 7 per cent preferred stock and 500,000 shares of no par value common stock.

XUM

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Sept. 7		Aug. 31		Aug. 24	
OKLAHOMA (Group 3)—						
50-52 450 end point	.10¾	.10⅞	.10½	.10¾	.10¼	.10½
56 58 450 end point	.10¾	.10⅞	.10½	.10⅝	.10¼	.10½
58-60 450 end point	.10⅞	.11¼	.10⅝	.10⅞	.10⅜	.10⅝
58 60 437 end point (U. S. Motor)	.11	.11⅜	.10¾	.11¼	.10⅜	.11
60-62 400 end point	.11⅝	.11¾	.11⅜	.11½	.11¼	.11⅜
64-66 375 end point	.11⅞	.12	.11⅝	.11⅞	.11½	.11⅝
68-70 360 end point	.12	.12⅛	.12	.12⅛	.12	.12⅛
KANSAS—						
58-60 437 end point (U. S. Motor)	.11⅜	.11½	.11¼	.11½	.11⅜	.11⅜
NORTH TEXAS—						
48 50 450 end point (Naphtha)	.10⅝	.10⅜	.10½		.10¼	
50-52 450 end point (Naphtha)	.10¾		.10½	.10¾	.10¼	.10⅜
56-58 450 end point	.10¾	.10⅞	.10⅜	.10½	.10¼	.10⅜
58-60 437 end point (U. S. Motor)	.11	.11¼	.10⅜	.11	.10½	.10¾
60-62 400 end point	.11½	.11⅝	.11¼	.11⅜	.11⅛	.11¼
64 66 390 end point	.11⅝	.11⅞	.11⅜	.11½	.11¼	.11⅜
64-66 375 end point	.11¾	.11⅞	.11½	.11⅝	.11⅜	.11½
68-70 360 end point	.12	.12⅛	.12	.12⅛	.11⅞	.12
NORTH LOUISIANA—						
58-60 437 end point (U. S. Motor)	.11¼	.11¼	.10¾	.11	.10¾	.11¼
64-66 375 end point	.11¾	.12	.11½	.12	.11½	.12
ARKANSAS—						
58-60 437 end point (U. S. Motor)	.11¼	.11½	.10¾	.11	.10¾	.11
64-66 375 end point	.12		.11½	.11¾	.11½	.11¾
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.14	.14½	.13⅞	.14	.13¾	.14
PENNSYLVANIA—						
52 Naphtha	.12¼	.12½	.12¼	.12½	.12½	.12¾
54 Naphtha	.12½	.12⅝	.12½	.12⅝	.12¾	.13
56 Gasoline	.12⅝	.12⅞	.12⅝	.12⅞	.13	.13⅛
58 Gasoline	.12⅞	.13	.12⅞	.13	.13⅛	.13¼
60 Gasoline	.13⅛	.13⅜	.13⅛	.13¾	.13½	.14
62 Gasoline	.14¼	.14½	.14¼	.14½	.14½	.14¾
64 Gasoline	.14½	.14¾	.14½	.14¾	.14¾	.15
66 Gasoline	.15½	.15¾	.15½	.15¾	.15¾	.16
68-70 Gasoline	.17½	.17¾	.17½	.17¾	.17¾	.18
CALIFORNIA—						
54-58 437 end point (U. S. Motor) domestic	.12	.12½	.12	.12½	.12	.12½
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 end point (Naphtha)	.10¾	.11	.10½	.11	.10½	.10⅝
56 58 450 end point	.10¾	.11	.10½	.10¾	.10½	.10⅝
58-60 437 end point (U. S. Motor)	.11¼	.11⅜	.11	.11¼	.10¾	.11
60-62 400 end point	.11½	.11¾	.11½	.11⅝	.11¼	.11½
64-66 375 end point	.11¾	.12	.11⅝	.12	.11⅝	.11¾
68-70 360 end point	.12¼		.12¼	.12½	.12	.12¼

*Colorado points.

NATURAL GASOLINE

	Sept. 7		Aug. 31		Aug. 24	
OKLAHOMA (Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.10¼		.10	.10⅛	.09¾	.09⅞
Grade A, 72-79.9, 375 e.p., rec. 90%	.10¼		.10	.10⅛	.09¾	.10
Grade BB, 84-92, 375 e.p., rec. 85%	.10	.10⅛	.09⅞	.10	.09½	.09⅝
Grade B, 76-83.9, 375 e.p., rec. 85%	.10	.10⅛	.10		.09½	.09⅝
Grade C, 80-90, 375 e.p., rec. 78%	.09¾	.10	.09¾	.10	.09¼	.09½
NORTH TEXAS—						
Grade AA, 80 87.9, 375 e.p., rec. 90%	.10¼	.10⅜	.10		.09¾	.10
Grade A, 72-79.9, 375 e.p., rec. 90%	.10⅛	.10⅜	.10		.09¾	.10
Grade BB, 84-92, 375 e.p., rec. 85%	.10	.10⅛	.09⅞	.10	.09½	.09¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.10	.10⅛	.10		.09½	.09¾
Grade C, 80-90, 375 e.p., rec. 78%	.09¾	.10	.09¾	.10	.09¼	.09½
NORTH LOUISIANA—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.10⅝	.10¾	.10⅝	.10¾	.10	.10¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.10½	.10⅝	.10½	.10⅝	.09⅞	.10⅛
Grade C, 80-90, 375 e.p., rec. 78%	.10⅜	.10½	.10⅜	.10½	.09¾	.10
CALIFORNIA—						
75-85, 375-390 end point	.15½	.16	.15½	.16	.15½	.16
CHICAGO DISTRICT (Based on Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.10	.10¼	.10	.10¼	.09½	.09¾
Grade A, 72-79.9, 375 e.p., rec. 90%	.10	.10¼	.10	.10¼	.09½	.09¾
Grade BB, 84-92, 375 e.p., rec. 85%	.09¾	.10	.09¾	.10	.09¼	.09½
Grade B, 76-83.9, 375 e.p., rec. 85%	.09¾	.10	.09⅞	.10	.09¼	.09½
Grade C, 80-90, 375 e.p., rec. 78%	.09¾		.09¾	.10	.09	.09¼

MOTOR NATURAL GASOLINE

	Sept. 7		Aug. 31		Aug. 24	
OKLAHOMA (Group 3)—						
60 62 450 end point	.10½	.10¾	.10⅜	.10½	.10¼	.10⅜
64-66 437 end point	.10¾	.11	.10½	.10⅜	.10¼	.10½
NORTH TEXAS—						
64-66 437 end point	.10¾		.10⅜	.10½	.10¼	.10⅜
PENNSYLVANIA—						
*60-62	.13	.13¼	.13	.13¼	.13	.13¼
*64-66	.13¼	.13½	.13¼	.13½	.13¼	.13½
*66 68	.13½	.13¾	.13½	.13¾	.13½	.13¾
*68-70	.13½	.13¾	.13½	.13¾	.13½	.13¾
CHICAGO DISTRICT (Based on Group 3)—						
60-62 450 end point	.10½	.10¾	.10½		.10½	
64-66 437 end point	.10¾		.10¾	.11	.10½	.10¾

*At Sistersville, W. Va.

BURNING OIL

	Sept. 7		Aug. 31		Aug. 24	
KANSAS—						
41-43 water white Kerosene	.09⅝	.09¾	.09½	.09¾	.09½	.09⅝
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.09½	.09⅝	.09½	.09⅝	.09	.09½
42-44 water white Kerosene	.09⅞	.10⅛	.09⅞	.10	.09½	.09¾
NORTH LOUISIANA—						
41-43 prime white Kerosene	.09½	.10	.09½	.10	.09¼	.09½
ROCKY MOUNTAIN STATES—						
*40-41 water white Kerosene	.12½	.12¾	.12½	.12¾	.12	.12¼
NORTH TEXAS—						
41-43 water white Kerosene	.09⅜	.09½	.09½		.09	.09⅜
ARKANSAS—						
41-43 water white Kerosene	.09½		.09½	.10	.09¼	.09½
PENNSYLVANIA—						
43 Kerosene prime white	.09¾	.10	.09¾	.10	.09½	.09¾
45 Kerosene water white	.10¼	.10½	.10¼	.10½	.09¾	.10
46 Kerosene water white	.11	.11¼	.10¾	.11	.10½	.10¾
47 Kerosene water white	.11¼	.11½	.11¼	.11½	.11	.11¼
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom Neutral	.08½	.08¾	.08½	.08¾	.08½	.08¾
36 Miners' Neutral	.07¼	.07½	.07¼	.07½	.06¾	.07
300 Mineral Seal	.08¼	.08½	.08¼	.08½	.08¼	.08½
CALIFORNIA—						
38 40 water white (high burning test)	.07½	.08	.07½	.08	.07½	.08
Engine distillate, 43-45 445 end point	.09¾	.10	.09¾	.10	.09¾	.10
Engine distillate, 42-44 480 end point	.09¼	.09½	.09¼	.09½	.09¼	.09½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.09½	.09¾	.09½	.09¾	.09	.09½
42-44 water white Kerosene	.10	.10¼	.10	.10¼	.09½	.09¾

*Colorado points.

FUEL OILS

	Sept. 7		Aug. 31		Aug. 24	
KANSAS—						
24-26 Fuel Oil	1.60	1.65	1.55		1 50	1.55
32-36 Gas Oil	.04⅝	.04¾	.04⅝	.04¾	.04⅝	.04¾
38-40 Distillate	.05⅝	.05⅞	.05½	.05¾	.05½	.05¾
OKLAHOMA (Group 3)—						
Below 22 Fuel Oil (sellers' cars)	1.35	1.40	1.35		1.32½	1.35
22-26 Fuel Oil (sellers' cars)	1.40	1.45	1.40	1.42½	1.37½	1.40
24-26 Fuel Oil (sellers' cars)	1.47½	1.50	1.45	1.50	1.42½	1.45
26-30 Fuel Oil (sellers' cars)	1.60	1.65	1.55	1 60	1.50	1.55
28 30 Fuel Oil (sellers' cars)	1.70	1.75	1.65	1.70	1.55	1.60
32-36 Gas Oil (cracking stock)	.04¼	.04½	.04¼	.04½	.04½	
36-38 Distillate	.05¼	.05½	.05¼	.05½	.05¼	.05½
38-40 Straw Distillate	.05½		.05½		.05½	
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.50	1.52½	1.50	1.55	1.47½	1.50
32-36 Gas Oil (straw)	.04⅜	.04½	.04⅜	.04½	.04½	
38-40 Straw Distillate	.05¼	.05½	.05¼	.05½	.05⅛	.05¼
NORTH LOUISIANA—						
18-20 Fuel Oil	1.35	1.40	1.35	1.40	1.32½	1.37½
32-36 Gas Oil (straw)	.04¾	.05	.04¾	.05	.04¾	.05
32-36 Gas Oil (dark)	.04½	.04¾	.04½	.04¾	.04½	.04¾
36-38 Distillate	.05	.05¼	.05	.05¼	.05	.05¼
ARKANSAS—						
38-40 Distillate	.05½		.05¼	.05½	.05¼	.05½
32-36 Gas Oil (straw)	.04½	.04¾	.04½	.04¾	.04½	.04¾
16-20 Refinery Fuel Oil	1.27½	1.30	1.25	1.30	1.25	1.30
GULF COAST (South Texas)—						
Gas Oil	.05⅝	.05¾	.05⅝	.05¾	.05⅝	.05¾
Fuel Oil	1.75	1.85	1.75	1.85	1.75	1.85
PENNSYLVANIA—						
30-34 Fuel Oil	.05¾	.05⅞	.05¾	.05⅞	.05¾	.05⅞
36-40 Fuel Oil	.06½	.06⅝	.06¼	.06½	.06¼	.06½
CALIFORNIA—						
33-36 Distillate	.04	.04¼	.04	.04¾	.04	.04¾
27 32 Distillate	.03¾	.04	.03¾	.04	.03¾	.04
15-20 Fuel Oil (at tide water)	1.00	1.04	1.00	1.04	1.00	1.04
27 plus Diesel	1.15	1.19	1.15	1.19	1 15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars) Group 3	1.45	1.50	1.45	1.47½	1.40	1.45
22-26 Fuel Oil (sellers' cars) Group 3	1.40	1.45	1.37½	1.42½	1.35	1 40
18-22 (Group 3)	1.35	1.40	1.35	1.37½	1.30	1.35
18 20 (Smackover)	1.25	1.30	1.25	1.30	1 25	1.30
32-36 Gas Oil	.04¼	.04½	.04¼	.04⅜	.04¼	.04½
36-38 Distillate	.05¼	.05½	.05¼	.05⅜	.05	.05¼
38-40 Straw Distillate	.05½	.06	.05½	.05¾	.05¼	.05½

LUBRICATING OILS AND WAX

	Sept. 7		Aug. 31		Aug. 24	
OKLAHOMA (Group 3)—						
70-80 vis., 2½ color, 20-25 cold test	.06	.07	.06	.07	.06	.07
100 vis., 2 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
100 vis., 3 color, 20 25 cold test	.06½	.07	.06½	.07	.06½	.07
150 vis., 3 color, 20-25 cold test	.09½	.10	.09½	.10	.09½	.10
150 vis., 4 color, 20-25 cold test	.09¾		.09¾		.09¾	
180 vis., 3 color, 23 28 cold test	.10½	.11½	.10½	.11½	.10½	.11½
180 vis., 4 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
200 vis., 3 color, 23-28 cold test	.10¾	.12¼	.10¾	.12¼	.11¼	.12¼
200 vis., 4 color, 23-28 cold test	.11¼	.11½	.11¼	.11½	.11¼	.11½
220 vis., 3 color, 25-30 cold test	.13	.13½	.13½	.14	.13½	.14
220 vis., 4 color, 25-30 cold test	.13		.13		.13	
240 vis., 3 color, 25-30 cold test	.14	.15	.14½	.15	.14½	.15
240 vis., 4 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
280 vis., 3 color, 25-30 cold test	.16	.17	.16½	.17	.16½	.17
280 vis., 4 color, 25 30 cold test	.15½	.16½	.15½	.16½	.15½	.16½
180 vis., 5 color, 23-28 cold test	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
200 vis., 5 color, 23-28 cold test	.10	.11¼	.10¾	.11¼	.10¾	.11¼
220 vis., 5 color, 25 30 cold test	.12	.12¼	.12	.12¾	.12	.12¾
240 vis., 5 color, 25-30 cold test	.13	.14	1.3	.14	.13	.14
280 vis., 5 color, 25-30 cold test	.15	.16	.15	.16	.15	.16
Cylinder Stocks:						
170-200 vis., S. R. green, 40-45 cold test	.08	.11	.08	.11	.08¼	.11
170 190 dark green, 40-45 cold test	.06	.07	.06	.06½	.06	.06½
190-200 vis. @ 210 "D" Bright Stock	.33	.35	.33	.35	.33	.35
150 vis. @ 210 "D" Bright Stock	.28	.31	.28	.31	.28	.31
200-210 vis. @ 210 "E" Bright Stock	.30	.31	.30	.31	.30	.31
150 vis. @ 210 "E" Bright Stock	.27	.28	.72	.28	.27	.28
Waxes:						
124-126 White Crude Scale Wax	.04¾		.04¾		.04¾	
PENNSYLVANIA—						
150, 3 color	.23¼		.23¼		.23¼	
180, 3 color	.26½		.26½		.26½	
200, 3 color	.29		.29		.28¾	
220, 3 color	.31		.31		.31	
600, steam refined	.13		.13		.13	
635, steam refined	.16¾		.16¾		.16⅞	
650, steam refined	.17½		.17½		.17½	
600, Pennsylvania flash	.23		.23		.25½	
630, Pennsylvania flash	.32½		.33		.33	

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

*550, E filtered	.19		.19		.19	
600, E filtered	.20		.20		.19½	
*600, E filtered	.20½		.20½		.20½	
600, D filtered	.27		.27		.27	
550, E filtered	.18		.18		.18	
550, D filtered	.22		.22		.22	
Pennsylvania Bright Stock	.41½		.41½		.41½	
122 124 White Crude Scale Wax	.05¼	.05⅜	.05¼	.05⅜	.05¼	.05⅜
†124-126 White Crude Scale Wax	.05¾	.05½	.05¾	.05½	.05¾	.05½

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.06	.07	.06	.07	.06	.07
No. 2 color, 100 vis., pale oil	.08½	.09	.08½	.09	.08	.08½
No. 3 color, 200 vis., pale oil	.11½	.12	.11½	.12	.11½	.12
No. 3½ color, 300 vis., pale oil	.12½	.13	.12½	.13	.12½	.13
No. 3¾ color, 500 vis., pale oil	.14	.14½	.14½	.15	.14½	.15
No. 4 color, 750 vis., pale oil	.17½	.18½	.17½	.18	.17½	.18
No. 2 plus color, 200 vis., pale filtered	.21½		.21½		.21½	
No. 2 color, 300 vis , pale filtered	.24½		.24½		.24½	
No. 2½ color, 500 vis., pale filtered	.27½		.27½		.27½	
No. 2½ color, 750 vis., pale filtered	.35½		.35½		.35½	
No. 5 to 6 color, 200 vis., red oil	.10	.10½	.10	.10½	.09½	.10
No. 5 to 6 color, 300 vis., red oil	.11½	.12	.11½	.12	.11½	.12
No. 5 to 6 color, 500 vis., red oil	.12½	.13	.12½	.13	.12½	.13
No. 5 to 6 color, 750 vis., red oil	.16½	.17	.16½	.17	.16	.16½
CALIFORNIA—						
130 vis., 2½-3 color	.10	.11½	.10	.11½	.10	.11½
200 vis., 2½-3 color	.13½	.14½	.13½	.14½	.13½	.14½
300 vis., 3 -3½ color	.15	.16	.15	.16	.15	.16
350 vis., 3½-4 color	.16½	.17½	.16½	.17½	.16½	.17½
400 vis., 3½-4 color	.18	.19	.18	.19	.18	.19
Red Neutrals:						
200 vis., 3½-5 color	.12	.13	.12	.13	.12	.13
300 vis., 5 -6 color	.13	.14	.13	.14	.13	.14
400 vis., 5 -6 color	.15	.16	.15	.16	.15	.16
500 vis., 4½ 5 color	.18	.19	.18	.19	.18	.19
500 vis., 6 -6½ color	.16	.17	.16	.17	.16	.17
600 vis., 6½ plus color	.17	.18	.17	.18	.17	.18

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

Gasoline:	Sept. 7	Aug. 31	Aug. 24
U. S. Motor, 58-60 437	.13	.13	.13
Export, 64-66 375	.15	.14	.14
Kerosene, prime white, 41-43	.11	.11	.11
*Bunker Oil, 14-16, per bbl.	1.75	1.75	1.75
*Diesel Oil, 28-30, per bbl.	2.50	2.50	2.50
Gas Oil, 28 plus	.06¾	.06¾	.06¾
Furnace Oil (tankwagon)	.11½	.11½	.11½
Cylinder Oil, light filtered, 600 s.r.	.29	.29	.29
Bright Stock, No. 5, 150 vis., at 212 F.	.42	.42	.42
White Neutral, No. 1, 170 vis., 1 color	.37	.37	.37
Spindle Oil, No. 1 red, 230 vis., 5½ color	.17½	.17½	.17½
Pale Oil, "25," 170 vis., 3½ color	.13	.13	.13
Pale Oil, "28," 100 vis., 2 color	.08	.08	.08
Red Oil:			
No. 3, 160 vis , 7 color	.11	.11	.11
No. 2, 212 vis., 5½ color	.12	.12	.12
No. 1, 265 vis., 5½ color	.13½	.13½	.13½
Polar, 295 vis., 6 color	.14	.14	.14
Paraffin Wax, refined:			
120-122 a.m.p., per lb.	.05⅞	.06	.06
125-127 a.m.p., per lb.	.06	.06⅛	.06⅛
130-132 a.m.p, per lb.	.06½	.06½	.06½
135-137 a.m.p., per lb.	.06¾	.07	.07
Petrolatum, in bbls., per lb.:			
Dark green	.01⅞	.01⅞	.01⅞
Amber	.03¼	.03⅛	.03⅛
Cream	.05¾	.05½	.05½
Lily white	.07¾	.07½	.07½
Snow white	.08¾	.08½	.08½

*Lighterage 5.5c a barrel extra.

NEW YORK CASE EXPORT PRICES

	Sept. 7	Aug. 31	Aug. 24
Gasoline, U. S. Motor, 58 60	.28.90	.28.90	.28.90
Kerosene:			
Standard white Kerosene	.19.65	.19.65	.19.65
Water white Kerosene	.21.15	.21.15	.21.15

LOS ANGELES EXPORT PRICES

	Sept. 7		Aug. 31		Aug. 24	
Kerosene water white	.05½	.06½	.05½	.06½	.05½	.06½
U. S. Motor Gasoline, 54-56 437 e.p.	.10	.10½	.10	.10½	.10	.10½

CRUDE OIL PRICES

OKLAHOMA, KANSAS AND NORTH TEXAS

***Prairie Oil & Gas Co.**

(Oklahoma, Kansas and North and East Central Texas)

(Effective May 15)

28° to 28.9°	$1.65
29° to 29.9°	1.73
30° to 30.9°	1.81
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.21
36° to 36.9°	2.29
37° to 37.9°	2.37
38° to 38.9°	2.45
39° to 39.9°	2.53
40° to 40.9°	2.61
41° to 41.9°	2.69
42° to 42.9°	2.77
43° to 43.9°	2.85
44° to 44.9°	2.93
45° to 45.9°	3.01
46° to 46.9°	3.09
47° to 47.9°	3.17
48° to 48.9°	3.25
49° to 49.9°	3.33
50° to 50.9°	3.41
51° to 51.9°	3.49
52° and above	3.57

*Other major purchasers except as noted below.

Champlin Refining Co.

(Garber and Tonkawa)

(Effective May 15)

Schedule based on Prairie Oil & Gas Co. paying 10 cents additional for each grade of crude above 38° gravity.

Humble Oil & Refining Co.

(Effective May 15)

(North and East Central Texas, Ranger, Mexia, Powell, Richland, Wortham, Currie, Moran, Big Lake, Nacona and Lytton Springs)

Same prices as Prairie Oil & Gas Co. schedule. Postings below 28° gravity 8 cents less for each degree, effective June 21.

Magnolia Petroleum Co.

(Effective May 15)

(Oklahoma, Kansas and North and East Central Texas, except Corsicana heavy, and Lytton Springs of South Central Texas)

Below 28°	$1.30
Other grades same as Prairie Oil & Gas Co.	
Iatan	$1.15
Corsicana heavy	1.25
Panola County:	
30° to 34.9°	$1.95
35° to 37.9°	2.10
38° and above	2.25

TEXAS PANHANDLE

Kay County Gas Co.
Magnolia Petroleum Co.

(Effective May 15)

28° to 28.9°	$1.35
29° to 29.9°	1.40
30° to 30.9°	1.45
31° to 31.9°	1.50
32° to 32.9°	1.55
33° to 33.9°	1.60
34° to 34.9°	1.65
35° to 35.9°	1.70
36° to 36.9°	1.75
37° to 37.9°	1.80
38° to 38.9°	1.85
39° and above	1.90

Humble Oil & Refining Co.

(Effective June 21)

39° to 39.9°	$1.90
40° to 40.9°	1.95
41° to 41.9°	2.00
42° to 42.9°	2.05
43° to 43.9°	2.10
44° and above	2.15

Grades below 39° gravity same as posted by Magnolia Petroleum Co. and Kay County Gas Co.

WEST TEXAS

Kay County Gas Co.

(Crane, Upton and Crockett Counties.

(Effective August 11)

Below 26°	$1.20
26° to 26.9°	1.25
27° to 27.9°	1.30
28° to 28.9°	.135
29° to 29.9°	1.40
30° to 30.9°	1.45
31° to 31.9°	1.50
32° to 32.9°	1.55
33° to 33.9°	1.60
34° to 34.9°	1.65
35° to 35.9°	1.70
36° and above	1.75

GULF COAST

***Humble Oil & Refining Co.**

(Effective May 15)

Grade A	$1.40
Grade B—	
Below 25°	1.40
25° to 25.9	1.45
26° to 26.9°	1.50
27° to 27.9°	1.55
28° to 28.9	1.60
29° to 29.9°	1.65
30° to 30.9°	1.70
31° to 31.9	1.75
32° to 32.9°	1.80
33° to 33.9°	1.85
34° to 34.9°	1.90
35° and above	1.95
Boling (December 26)	1.50
Spindletop (effective August 30)	
Grade A	$1.25
Grade B—	
Below 25°	1.25
25° to 25.9°	1.30
26° to 26.9°	1.35
27° to 27.9°	1.40
28° to 28.9°	1.45
29° to 29.9	1.50
30° to 30.9°	1.55
31° to 31.9°	1.60

*All major purchasers except as noted below. Sun Pipe Line Co. prices for Spindletop crude, effective August 10, and Gulf Pipe Line Co., August 6, 10 cents higher on Grade B.

The Texas Company

(Effective June 8)

Grade A	$1.40
Grade B	1.40
†Light Crude—	
35° to 35.9	1.95
36° to 36.9°	2.00
37° to 37.9°	2.05
38° to 38.9°	2.10
39° to 39.9°	2.15
40° and above	2.20

†The Texas Company's postings on light crude under 35° gravity are same as Humble Oil & Refining Co.'s grades and prices for Grade B crude. Spindletop prices same as for Humble Oil & Refining Co., but classified according to The Texas Company's general schedule to 31° to 31.9° crude.

SOUTH CENTRAL AND SOUTHWEST TEXAS

***Magnolia Petroleum Co.**	
Luling (contract) (Eff. May 18)	$1.30
Mirando (Webb, Jim Hogg and Zapata Counties) (May 15)	1.25
Rockdale-Minerva (Milam County)	1.25
Thrall	1.00
Calliham (Live Oak and McMullen Counties) (May 15)	1.75
§Lockhart (Lytton Springs)	
Somerset (Grayburg Pipe Line Co.): (Effective May 17)	
28° to 28.9°	$1.25
29° to 29.9°	1.35
30° to 30.9°	1.71
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
34° to 34.9°	2.13
35° to 35.9°	2.20
36° to 36.9°	2.29
37° to 37.9°	2.37
38° and above	2.45

*Texpata Pipe Line Co. and Humble Pipe Line Co. also post in Mirando Field. Humble prices 25 cents less, effective August 30.

§Lockhart prices same as for North and East Central Texas. Lockhart posted by Magnolia Petroleum Co. and Humble Oil & Refining Co.

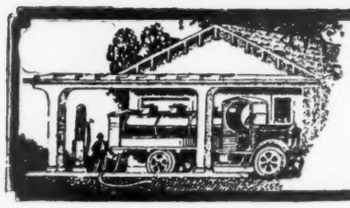
ARKANSAS AND NORTH LOUISIANA

Standard Oil Co. of Louisiana

(Effective May 18)

Caddo:	
Below 26° (July 24)	$1.40
26° to 28.9° (July 24)	1.55
29° to 31.9° (July 24)	1.70
32° to 34.9°	2.25
35° to 37.9°	2.35
38° and above	2.45
Homer below 31°	1.85
31° to 32.9°	2.00
33° to 34.9°	2.10
35° and above	2.20
Haynesville below 33°	2.00
33° and above	2.10
El Dorado below 33°	2.00
33° to 34.9°	2.10
35° to 36.9°	2.20
37° and above	2.30
Bull Bayou, 32° to 34.9°	1.95
35° to 37.9°	2.10
38° and above	2.25
Cotton Valley	1.20
DeSoto	2.30
Crichton	2.10
Bellevue	1.50
Smackover, below 24°	1.10
24° to 24.9°	1.35
25° to 25.9°	1.40
26° to 26.9°	1.45
27° and above	1.50
*Stephens, Ark., below 26°	1.45
26° and above	1.65

(Continued on page 167.)



TANK WAGON MARKETS

Tankwagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, Sept. 7.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)
Main Service Station Price

	Gasoline			Kero.
	Tank wagon	Service station	Inclds tax of	Tank wagon
Chicago Dist.—				
†Less than 100 gals.	19.0	21.0	...	15.5

Tank wagon prices on April 19, 1922; g. up 1½c; May 8, up 1c; June 27, g. and k. up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 20, g. up 2c; Jan. 12, 1924, g. up 2c; k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12, g. down 2c; Jan. 23, 1925, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Feb. 12, g. up 2c, k. up 1c; April 19, g. down 1c; July 14, g. up 1c; Aug. 25, g. down 2c, k. down 1c; Sept. 1, g. down 1c; Feb. 4, 1926, g. up 1c; k. up 1c; April 16, 1926, k. up 1c; April 24, 1926, k. up ½c; April 29, 1926, g. up 1c, k. up ½c; May 6, 1926, k. up ½c; May 17, g. and k. up 1c July 1, k. down 1c; July 3, k. down 1c; Aug. 13, k. up 1c; Aug. 24, k. up 1c.

Decatur, Ill.	19.2	21.2	...	16.0
E. St. Louis	18.1	20.25	...	15.1
Joliet	19.4	21.4	...	16.2
Peoria	19.2	21.2	...	16.0
Quincy	19.2	21.2	...	15.8
Davenport, Ia.	21.5	23.5	2.0	16.4
Des Moines	21.5	23.5	2.0	16.4
Keokuk	21.5	23.5	2.0	16.4
Sioux City	18.9	20.9	2.0	16.0
Duluth, Minn.	22.5	24.5	2.0	17.1
Minneapolis	22.2	24.2	2.0	17.1
La Cross, Wis.	22.2	24.2	2.0	16.9
Milwaukee	21.1	23.1	2.0	15.8
Madison	21.3	23.3	2.0	16.0
Detroit, Mich.	21.8	23.8	2.0	16.7
Grand Rapids	21.7	23.7	2.0	16.6
Saginaw	21.9	23.9	2.0	16.8
Evansville, Ind.	22.0	24.0	3.0	16.0
Ft. Wayne	22.4	24.4	3.0	16.4
Indianapolis	22.2	24.2	3.0	16.2
South Bend	22.4	24.4	3.0	16.4
Fargo, N. D.	23.9	25.9	2.0	19.1
Huron, S. D.	23.5	25.5	3.0	17.6
Sioux Falls	22.0	24.0	3.0	17.1
*K. C. Mo.	21.9	23.9	3.0	14.8
*Springfield	21.8	23.8	3.0	16.7
*St. Louis	20.6	22.9	2.5	15.5
*St. Joseph	21.0	23.0	2.5	15.4
‡Wichita, Kan.	19.8	21.8	2.0	15.3
Bartlesville, Ok.	20.8	22.8	3.0	15.3

NAPHTHAS

	Tank wagon	Tank car
Oleum spirits	21.0	15.5
V. M. & P. naphtha	23.0	16.5
Cleaners naphtha	21.0	17.5

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

*State tax is 2c. Remainder is city tax.
†Quantity price on more than 100 gallons, 18.0.
‡At all Kansas points a discount of 1 cent a gallon is allowed from the tankwagon postings on dumps of 50 gallons or more.

The following monthly rebate system is effective on tankwagon schedules throughout the territory of Standard Oil Co. of Indiana: Over 750 gallons, ½c; over 2,000 gallons, ¾c; over 3,000 gallons, 1c; over 6,000 gallons, 1½c; over 10,000 gallons, 2c. If quantity bought during the year is equal to 12 times the monthly agreed purchases the discount will be paid or credited on the entire quantity less monthly payments. Service station customers will receive discount of 1 cent a gallon on purchases amounting to 200 gallons a month or 2,400 gallons a year; and 2 cents a gallon on 600 gallons a month or 7,240 gallons a year.

STANOLIND FURNACE OIL
(Standard Oil Co. of Indiana)

Less than 100 gallons	10.0
100 to 399 gallons	9.5
400 or more gallons	9.0

SOUTHWESTERN DISTRICT
***Magnolia Petroleum Co.**

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
Dallas, Tex.	‡17.0	17.0	1.0	14.0
Fort Worth	‡17.0	17.0	1.0	14.0
Houston	‡22.0	21.0	1.0	14.0
San Antonio	‡19.0	19.0	1.0	14.0
El Paso	‡21.0	21.0	1.0	15.0
Texarkana	‡21.0	21.0	1.0	15.0
Muskogee, Ok.	20.0	23.0	3.0	14.0
Oklahoma City	18.0	21.0	3.0	14.0
Tulsa	20.0	23.0	3.0	14.0
Little Rock	22.0	25.0	4.0	15.5
Ft. Smith, Ark.	22.0	26.0	4.0	16.5

***The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, ½c; over 2,000 gallons, ¾c; over 3,000 gallons 1c; over 4,500 gallons, 1¼c; over 5,000 gallons, 1½c; over 8,000 gallons, 1¾c; over 10,000 gallons, 2c. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.**

The schedule on service station deliveries is: Over 200 gallons a month, 1c; over 300 gallons a month, 1¼c; over 400 gallons, 1¾c; over 600 gallons, 1¾c; over 600 gallons, 2c. The same rule applies for annual purchases as in the tankwagon discounts.

†Magnolia maintains only a retail schedule in Texas with dealers and large consumers allowed a flat 3-cent discount, except at El Paso where the discount is only 2 cents.

CENTRAL SOUTH DISTRICT
Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
*New Orleans	20.5	23.5	3.0	16.0
Alexandria	20.0	23.0	3.0	17.0
Baton Rouge	19.0	22.0	3.0	15.5
LaFayette	20.0	23.0	3.0	16.5
Lake Charles	20.5	23.5	3.0	17.5
Shreveport, La.	19.0	22.0	3.0	16.0
Memphis, Tenn.	20.0	23.0	3.0	17.0
Chattanooga	23.5	26.5	3.0	17.5
Knoxville	23.5	26.5	3.0	18.0
Nashville	21.0	24.0	3.0	18.0
Bristol	24.0	27.0	3.0	17.5
Little Rock Ark	22.0	26.0	4.0	16.0

*Tax of 3c includes city tax of 1c.
*Louisiana kerosene prices include 1-cent State tax.

SOUTHERN DISTRICT
Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
Atlanta, Ga.	25.0	28.0	3.5	19.0
Augusta	25.0	28.0	3.5	19.0
Macon	25.0	28.0	3.5	19.0
Savannah	23.0	25.0	3.5	17.0
Birm'ghm, Ala.	22.0	25.0	3.0	18.5
Mobile	21.0	24.0	3.0	17.0
Montgomery	23.0	26.0	3.0	19.5
Clarksdale, Miss	23.0	26.0	4.0	16.5
Jackson	23.0	26.0	4.0	16.5
Natchez	22.5	25.5	4.0	16.0
Vicksburg	22.5	25.5	4.0	16.0
Jack'ville, Fla.	23.0	26.0	4.0	17.0
Miami	25.0	28.0	4.0	18.5
Pensacola	23.0	26.0	4.0	17.5
Tampa	23.0	26.0	4.0	17.0
Covington	24.0	27.0	5.0	18.0
Louisville	24.0	27.0	5.0	17.0
Lexington, Ky.	25.0	28.0	5.0	18.0

In addition to the state tax of 2c on gasoline, Montgomery has city tax of 1c on gasoline and ½c on kerosene. Prices in Georgia include ½c inspection fee on gasoline and kerosene; in Florida, an inspection fee of 0.125c; in Alabama, an inspection fee of ½c on kerosene only.

ROCKY MOUNTAIN DISTRICT
Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
Denver, Colo.	22.0	22.0	2.0	18.0
Pueblo	22.0	24.0	2.0	18.0
Grand J'n'c't.	26.0	28.0	2.0	22.0
Casper, Wyo.	22.5	24.5	2.5	16.5
Cheyenne	23.5	25.5	2.5	18.0
Butte, Mont.	24.0	24.0	2.0	20.5
Helena	26.0	28.0	2.0	20.5
Salt Lake, Utah	26.0	28.0	3.5	19.0
Boise, Idaho	27.0	29.0	3.0	21.0
Albuquerque, N. Mex.	28.5	28.5	3.0	24.0

ATLANTIC COAST DISTRICT
Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
Atlantic City	19.0	....	...	17.0
Newark, N. J.	19.0	21.0	...	17.0
Annapolis, Md.	21.0	....	2.0	17.0
Baltimore	21.0	24.0	2.0	17.0
Cumberland	21.0	24.0	2.0	17.0
Washington	21.0	24.0	2.0	17.0
Danville, Va.	23.5	....	4.5	17.0
Norfolk	23.5	26.5	4.5	17.0
Petersburg	23.5	26.5	4.5	17.0
Roanoke	23.5	26.5	4.5	17.0
Richmond	23.5	26.5	4.5	17.0
Charleston, W. Va.	21.5	24.5	3.5	17.0
Keyser	22.5	....	3.5	17.0
Parkersburg	21.5	24.5	3.5	17.0
Wheeling	21.5	24.5	3.5	17.0
Charlotte, N. C.	23.5	26.5	4.0	17.0
Hickory	23.5	....	4.0	17.0
Mt. Airy	23.5	26.5	4.0	17.0
Salisbury	23.5	26.5	4.0	17.0
Charleston, S.C.	24.5	27.5	5.0	17.0
Columbia	24.5	27.5	5.0	17.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT
Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
Albany, N. Y.	17.0	....	...	18.0
*New York	21.0	....	...	18.0
Buffalo	20.0	....	...	18.0
Rochester	21.0	....	...	16.0
Syracuse	21.0	....	...	18.0
Boston, Mass.	21.0	....	...	18.0
Augusta, Me.	24.0	....	3.0	18.0
Manchester, N. H.	23.0	....	2.0	18.0
Burlington, Vt.	23.0	....	2.0	18.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station price in its territory. In most cases the service station price is 2 or 3 cents higher than tankwagon price.

NEBRASKA
Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
Omaha	21.25	23.25	2.0	16.0
McCook	22.75	24.75	2.0	17.5
Norfolk	21.75	23.75	2.0	16.5
N. Platte	21.75	24.75	2.0	17.25
Scottsbluff	22.25	24.25	2.0	16.75

PACIFIC COAST DISTRICT
Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
San Francisco	18.0	22.0	2.0	15.5
Los Angeles	18.5	20.5	2.0	16.5
Fresno	18.5	22.5	2.0	17.5
Reno, Nev.	23.5	27.5	4.0	19.0
Portland, Ore.	19.0	23.0	3.0	16.5
Seattle, Wash.	18.0	22.0	2.0	16.5
Spokane	22.0	26.0	2.0	20.5
Tacoma	18.0	22.0	2.0	16.5
Phoenix, Ariz.	25.0	28.0	3.0	21.5

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND
Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incldstax of	Tank wagon
*Pittsburgh, Pa.	20.0	25.0	...	17.0
*Philadelphia	20.0	25.0	...	17.0
*Scranton	20.0	25.0	...	17.0
*Allentown	20.0	25.0	...	17.0
Altoona	20.0	25.0	...	17.0
*Erie	18.0	23.0	...	15.0
Dover, Del.	22.0	25.0	2.0	17.0
Wilmington	22.0	25.0	2.0	17.0
Spring'd, Mass.	21.0	23.0	...	18.0
Worcester	21.0	23.0	...	18.0
Boston	21.0	23.0	...	18.0
Providence, R.I.	22.0	24.0	1.0	18.0
Hartford, Conn.	23.0	26.0	2.0	17.0
New Haven	23.0	26.0	2.0	18.0

*Pennsylvania tax of 2c is collected by the dealer and paid by him direct to the state.

TANKWAGON PRICE CHANGES

July 29—Standard Oil Co. of Louisiana advanced kerosene prices 1 cent to cover a state tax effective that date. Standard Oil Co. of New York reduced gasoline at Albany 2 cents.

August 2.—Standard Oil Co. of Louisiana reduced tankwagon and service station prices of gasoline 1½ cents at Memphis and Nashville, Tenn.

August 8—Standard Oil Co. of New York reduced tankwagon and service station prices of gasoline at Albany 2 cents.

August 19—Standard Oil Co. of New Jersey reduced tankwagon and service station prices of gasoline 1 cent at Wheeling, Charleston, Parkersburg, Huntington and Morton, W. Va.

At Texarkana, Texas and Arkansas, the gasoline price should have been 21 cents since July 3.

CRUDE PRICE CHANGES

August 20—Humble Oil & Refining Co. reduced Grade A 20 cents and Grade B gravities 10 cents each in all Gulf Coast fields except Spindletop where Grade A was reduced 35 cents and the B grades 25 cents. The Humble prices were adopted by all the major purchases meaning a reduction in all fields except Spindletop but a 10-cent advance in that field on Grade B as prices previously had been reduced there by other companies 35 cents. The Humble price change notice last week mentioned only Spindletop reductions.

CALIFORNIA CRUDE PRICES
***Standard Oil Co.-Union Oil Co.**
(Effective March 11)

Gravity—	Long Beach Huntington Beach Richfield Brea-Olinda Rosecrans-Dominguez Torrance-Inglewood	Whittier La Habra Montebello	Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Belridge	Coyote	Santa Fe Springs	Coalinga	Wheeler Ridge	Santa Maria Ventura Salt Lake
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.87	.85	.75	.85	....	.75	.75	.85
16°	.90	.85	.75	.85	....	.75	.75	.85
17°	.94	.85	.75	.85	....	.75	.75	.85
18°	.98	.86	.75	.86	....	.75	.75	.85
19°	1.04	.87	.75	.87	....	.75	.75	.85
20°	1.10	.89	.82	.90	.89	.79	.78	.90
21°	1.16	.91	.90	.98	.91	.86	.81	.97
22°	1.22	.94	1.00	1.06	.94	.93	.85	1.04
23°	1.28	.97	1.11	1.14	.97	1.00	.89	1.11
24°	1.34	1.01	1.22	1.22	1.02	1.07	.93	1.18
25°	1.40	1.06	1.33	1.30	1.08	1.14	.97	1.25
26°	1.46	1.09	1.44	1.38	1.16	1.21	1.01	1.32
27°	1.52	1.13	1.55	1.46	1.24	1.28	1.06	1.39
28°	1.58	1.17	1.66	1.54	1.32	1.35	....	1.46
29°	1.64	1.21	1.77	1.62	1.40	1.42	....	1.53
30°	1.70	1.25	1.88	1.70	1.48	1.49	....	1.60
31°	1.76	....	1.99	....	1.60	1.56	....	1.67
32°	1.84	....	2.10	....	1.72	1.63	....	1.73
33°	1.92	....	2.21	....	1.84	1.70	....	1.79
34°	2.00	....	2.32	....	1.96	1.77	....	1.85
35°	2.08	....	....	....	2.08	1.84	....	1.92
36°	2.16	....	....	....	2.16	....	....	....
37°	2.24	....	....	....	2.24	....	....	....
38°	2.34	....	....	....	2.34	....	....	....
39°	2.44	....	....	....	2.44	....	....	....
40°	2.54	....	....	....	....	....	....	....
41°	2.64	....	....	....	....	....	....	....
42°	2.74	....	....	....	....	....	....	....

*Column 2—Long Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Brea-Olinda, 14 to 30 degrees; Torrance and Inglewood, 14 to 28; Domingues, 24 to 42 degrees. Rosecrans crude ranges from 14 to 43 degrees, but only Union Oil Co. posts below 24 degrees.
Column 3—Whittier and La Habra crudes, 14 to 23 degrees; Montebello, 14 to 30 degrees.
Column 4—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 24 degrees.
Column 6—Santa Fe Springs. Only Union Oil Co. posts below 24 degrees.
Column 9—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura, 14 to 35 degrees. Posted only by Union Oil Co.

CALLES MAY MODIFY MEXICAN OIL LAWS

The first ray of hope in the Mexican oil situation and one coming as a surprise to petroleum companies operating in that country, is contained in the message of President Calles, read at the opening of Congress on September 1, in which, referring to the petroleum law interpreting the provisions of Article 27 of the Mexican Constitution and subsequent decrees, he said:

"If in practice, however, the Government finds that the application of these laws is not in accord with the policy which the government has followed, or if experience counsels moderation within the spirit of justice and equity, the Executive will indicate the appropriate changes and necessary measures to bring the application of the law and the government's policy in harmony."

Officials of oil companies declined to comment on the President's message. A joint commission of Mexican officials and representatives of oil companies is now working on matters connected with the application of the new petroleum law.

WAR on WASTE!

THE motorist, in buying oil, is entitled to correct lubrication for his engine—and it is the dealer's responsibility to see that he gets it. Sinclair feels that responsibility—and therefore manufactures Opaline Motor Oil to sell according to the Sinclair Law of Lubrication—a different grade of Opaline Motor Oil "for every degree of wear" of the engine.

This means correct lubrication and economical transportation. It is the motorist's protection against *Waste of Power* and wearing of parts. This is the Sinclair dealer's method of making more satisfied customers.

SINCLAIR REFINING COMPANY
45 Nassau Street, New York
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SINCLAIR OPALINE MOTOR OIL
REG. U. S. PAT. OFF.

1916-26—TEN YEARS OF MANUFACTURING AND DISTRIBUTING PETROLEUM PRODUCTS OF QUALITY

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TANKWAGON REDUCTIONS CUT DOWN AVERAGE

(Continued from Page 154)

GASOLINE PRICES EFFECTIVE SEPTEMBER 1, 1926

Table showing gasoline tankwagon prices as of September 1, 1926, exclusive of taxes, in 50 representative cities, including the amount and the date of changes since August 1, 1926. High and low prices and state taxes also given.

	Prices Aug. 1	August Changes	Prices Sept. 1	High and Low 1915		1921		Taxes July 1 1926
Birmingham, Ala.	20.0	....	20.0	20.0	13.0	20.0	13.0	2.0
Phoenix, Ariz.	22.0	....	22.0	20.0	18.0	20.0	16.0	3.0
Little Rock, Ark.	18.0	....	18.0	19.0	12.0	18.0	13.0	4.0
San Francisco, Cal.	16.0	....	16.0	15.0	13.0	15.0	11.0	2.0
Denver, Colo.	20.0	....	20.0	20.0	12.0	19.0	12.0	2.0
Hartford, Conn.	21.0	.. ....	21.0	21.0	15.0	20.0	13.0	2.0
Dover, Del.	20.0	....	20.0	21.0	15.0	20.0	14.0	2.0
Jacksonville, Fla.	19.0	....	19.0	19.0	12.0	19.0	12.0	4.0
*Atlanta, Ga.	21.0	....	21.0	21.0	14.0	19.0	11.0	3.5
Boise, Idaho	24.0	....	24.0	21.5	19.0	22.5	18.0	3.0
Peoria, Ill.	19.2	....	19.2	19.2	10.5	18.2	13.0	...
†Chicago, Ill.	18.0	....	18.0	18.0	13.0	18.0	13.0	...
Indianapolis, Ind.	19.2	.... ..	19.2	19.2	13.2	18.2	13.2	3.0
Des Moines, Iowa	19.5	.... ..	19.5	19.5	13.5	18.5	13.5	2.0
†Wichita, Kans.	16.8	....	16.8	18.8	8.8	17.8	12.8	2.0
Louisville, Ky.	20.0	.... 17 19.0	19.0	19.0	12.0	19.0	12.0	5.0
New Orleans, La.	17.5	.. ....	17.5	18.5	11.5	16.5	11.5	3.0
August, Me.	21.0	....	21.0	22.0	15.0	19.0	13.0	3.0
Baltimore, Md.	19.0	....	19.0	19.0	13.0	19.0	13.0	2.0
Springfield, Mass.	21.0	....	21.0	21.0	15.0	20.0	13.0	...
Detroit, Mich.	19.8	.... ..	19.8	19.8	13.8	18.8	13.8	2.0
Duluth, Minn.	20.5	....	20.5	20.5	13.5	19.2	14.5	2.0
Natchez, Miss.	18.5	....	18.5	18.5	11.5	18.5	11.5	4.0
**Kansas City, Mo.	18.9	....	18.9	18.9	12.9	17.9	11.9	3.0
Helena, Mont.	24.0	.. ....	24.0	24.0	18.0	23.0	18.0	2.0
Omaha, Neb.	19.25	....	19.25	19.25	10.0	18.25	11.0	2.0
Reno, Nev.	19.5	....	19.5	18.5	16.5	18.5	14.5	4.0
Newark, N. J.	19.0	....	19.0	19.0	13.5	19.5	13.5	...
Albuquerque, N. M.	25.5	....	25.5	23.5	19.5	23.0	18.0	3.0
New York, N. Y.	21.0	....	21.0	22.0	15.0	20.0	14.0	...
Charlotte, N. C.	19.5	.... ..	19.5	20.0	12.0	19.0	12.0	4.0
Fargo, N. D.	21.9	....	21.9	20.9	14.9	19.6	14.9	2.0
Cleveland, Ohio	20.0	....	20.0	18.5	15.0	20.0	15.0	2.0
Tulsa, Okla.	17.0	.... ..	17.0	18.0	9.5	18.0	9.5	3.0
Portland, Ore.	16.0	.. ....	16.0	15.0	13.0	16.0	12.0	3.0
‡Philadelphia, Pa.	20.0	....	20.0	21.0	15.0	20.0	14.0	2.0
Providence, R. I.	21.0	.... ..	21.0	22.0	15.0	20.0	13.0	1.0
Charleston, S. C.	19.5	....	19.5	20.5	12.5	19.0	12.5	5.0
Huron, S. D.	20.5	....	20.5	20.0	13.0	20.0	15.0	3.0
Memphis, Tenn.	18.5	17.0 ½	17.0	18.0	10.5	18.0	12.0	3.0
§Dallas, Tex.	17.0	.... 21 15.0	15.0	18.0	10.0	17.0	9.0	1.0
Salt Lake City, Utah	22.5	.... ..	22.5	21.5	17.5	21.5	16.5	3.5
Burlington, Vt.	21.0	....	21.0	22.0	15.0	19.0	13.0	2.0
Norfolk, Va.	19.0	.. ....	19.0	20.0	14.5	19.0	14.5	4.5
Washington, D. C.	19.0	....	19.0	19.0	14.0	19.0	14.0	2.0
Charleston, W. Va.	19.0	.... 16 18.0	18.0	19.0	14.0	19.0	14.0	3.5
Milwaukee, Wis.	19.1	....	19.1	19.1	13.1	18.1	13.1	2.0
Casper, Wyo.	20.0	.. ....	20.0	20.0	14.0	19.0	14.0	2.5
Seattle, Wash.	16.0	.. ....	16.0	15.0	13.0	16.0	12.0	2.0
Minneapolis, Minn.	20.2	....	20.2	20.2	13.2	18.9	12.0	2.0
Average price	19.697	.. ....	19.587	19.647	13.629	18.989	13.27	2.45

*Does not include ½-cent inspection fee. †Dump of less than 100 gallons at Chicago and 50 gallons at Wichita 1 cent higher. ‡Tax paid by retail dealer. §Prices effective May 5 based on 3-cent discount from service station posting as no tankwagon schedule is maintained in Texas. **State tax 2 cents, city tax 1 cent.

DOHERTY MAKES SHARP REPLY TO HUGHES

(Continued from Page 38)

mental importance to this country, and I am very certain that the majority of the intelligent people of the country would join with me in saying that, if our Federal Government does not have complete power to do whatever is necessary in times of war or in times of peace to protect us against embarrassment if war comes, and is powerless to prevent the ruthless waste of our most essential munition of war, then we must immediately initiate an amendment to our Constitution which will leave no question of the power of the Federal Government to do this.

I will admit that I can find nothing in the Constitution that says that if petroleum should in the future be discovered and that should it prove to be a most important munition of war, and in event that state jurisdiction proves wasteful, then the Federal Government shall have the right to legislate and yet no reference in our Constitution any less direct than this would satisfy some of these lawyers. However, it is inconceivable to me that the splendid group of men who drew our Constitution and who were fully cognizant of the stern necessities of war, would have proposed such a spineless document that the most important munition of war could be ruthlessly wasted and the Federal Government would be compelled to sit idly by, unable to conserve a precious resource, which in turn, would greatly lessen the need to sacrifice human life.

Power Over Human Lives

These men do not claim that Congress is without power, under its war powers, to legislate over the lives of the citizens of the states. In the Constitution it is provided that Congress may take the militia of any state and send it to any other place within the United States for war purposes, and this was agreed to at a time when the militia was a vital feature in the protection of the lives of the citizens of those states, and especially as against the possibility of Indian warfare. I can not conceive that any of the members of the Constitutional Convention felt that if Congress could command and use the militia of any state then that any of the resources of any state would not be available for the common defense and it was their belief that Congress would have the right to legislate regarding all resources needed for war purposes.

Even at this late date, and with all of the knowledge we now possess, it would be impossible to give Congress power to provide for the common defense by attempting to specifically enumerate the powers that Congress might exercise. In no way could we insure, even at this time, that Congress would have sufficient authority to provide for the common defense in the future except by either giving powers that were elastic in character or by interpreting the war powers given to Congress as necessarily being complete powers, permitting Congress to do anything necessary or desirable to provide for the common defense that might hereafter arise.

It must be remembered that petroleum was not discovered until approximately 70 years after the Constitution was adopted and there was no way to foresee at the time the Constitution was adopted that petroleum would be discovered or that it would play such an important part as a war resource. Possibly within the next 10 years some other now unknown agent may play a tremendous part as a war resource, and I hold that if it should, it immediately comes under the powers of Congress, regardless of how, where or by whom it is produced, if there arises any necessity for Congress to legislate regarding this new material. If any large percentage of the lawyers of this country support the oil lawyers and Judge Hughes in their position, then I think there are millions of citizens who will insist on removing this war handicap by the passage of a Constitutional amendment.

But One Place to Store

There is but one place to store oil for war purposes, and that is in its natural ground reserves, provided we are going to make due allowance for safety and economy. With the further development of aircraft, storage of oil above ground may become a war menace rather than a war protection. If it is possible to find, exhaust or destroy our remaining oil pools, the right of purchase is but an empty right regardless of our wealth if we wish to buy that which no longer exists.

Before discussing this feature of the limit on the power of the Federal Government due to its power to purchase oil by resorting to this power to expropriate if necessary, I am anxious for these lawyers to go further and show just how they would expropriate an oil pool after it had been opened by a discovery well. I think when they try to show exactly how they will proceed in a pool divided up amongst many owners, they will find that even expropriation is practically impossible and certainly extremely inadvisable.

But the importance of having oil for our Army and Navy is neither the sole problem nor possibly the most important problem. It is essential that our industries not only have oil without curtailment if war comes, but that their increased needs for oil produced by war conditions should be met. Those who suggest that the Government buy and store oil as against our war needs, as a solution to this problem, have given no evidence as yet that they have any real idea of what they are talking about, either as to the wisdom of the plan or the magnitude of the problem.

The lawyers who now insist that the power of the Federal Government is limited as to what it can do to provide for the common defense and claim that this is no new position on their part are, in my opinion, badly remiss in their duty to the people of this country if they have known right along that the states had power, and will continue to have power, to persist in doing that which will cripple our war efficiency and yet failed to bring this fact to public attention.

In my opinion, Congress can not only legislate regarding the production of oil but in doing so Congress will yet be even within sight of the twilight zone of the powers given to Congress to provide for the common defense.

FARISH WILL REPLY

NEW YORK, Sept. 2.—W. S. Farish, president of the American Petroleum Institute, commenting today upon the statement filed with the Federal Oil Conservation Board by Henry L. Doherty, said:

"Press reports of the contents of Mr. Doherty's statement are meager and incomplete. They indicate that the statement is filled with error and inaccuracy. When I have received and read the complete text of the statement, a reply will be prepared and filed with the board at Washington."

DEEP WELLS ON COAST DUE TO CONDITIONS

(Continued from Page 38)

zones, and unconformities into the upper or reservoir rocks. This combination of an underlying oil-forming series, with an overlying oil-collecting series, has been found necessary for large production.

Inasmuch as from 5,000 to 7,000 or more feet of the upper rocks are present at the largest oil fields, and most of the oils come from the lower part of this series, many of the wells are unusually deep.

The theory that most California oils originated in underlying organic rocks, and then escaping traveled into overlying and more detrital rocks, was established many years ago by a number of pioneer California geologists. It has since, with a few exceptions, been upheld by other geologists. The present writer has estimated that in Los Angeles Basin, the lower series (Miocene) is more than 300 times as organic as the upper series (Pliocene and Pleistocene). Moreover, every oil field in this district is indicated to be within 1 mile of some large fault zone suggesting transverse migration.

The theory outlined has stood the test of time. No large production has even been found in or near Los Angeles Basin except where the two types of rocks occur together. Hundreds of wells and millions of dollars have been wasted in California by operators who have ignored this theory and who have suffered in consequence.

Many wells which have been drilled just within the edges of Los Angeles Basin have passed entirely through the overlying (reservoir) series. The deepest of these No. 96 Olinda of the Chanslor Canfield Midway Oil Co. which is drilling at 7,975 feet, has also penetrated all, or nearly all, of the underlying (oil-forming) rocks.

Only a very few of the wells which have been drilled in the central parts of the basin have passed entirely through the overlying (reservoir) series. The more definite of these are at Long Beach and Rosecrans.

No. 6 Athens of the Miley Oil Co., at Rosecrans, 7,591 feet in depth, is not only the deepest producing oil well in

the world, but is also indicated to have the deepest stratigraphic penetration of any well drilled in the more central parts of Los Angeles Basin. Through the courtesy of E. J. Miley and his organization, the writer has been permitted to examine the log and cores of this well, and to comment upon these.

The log gives little information. The cores, however, throw considerable light upon the deeper strata in central Los Angeles Basin. They were taken at intervals between 4,334 and 7,563 feet.

(1) The cores from 4,334 to 6,407 feet reveal a lithology typical of the Pico formation, or lower detrital series of southern California. These cores are composed chiefly of soft, fine-grained sand of a light gray color, with which is interbedded lesser amounts of soft, sandy shales which are prevailingly brown in color. This series is poorly bedded, and the sands and shales show a tendency to grade into one another.

(2) From 6,425 to 7,563 feet, the lithology is distinctly different. Hard, very coarse-grained sandstone, comparatively pure and almost white, appears at 6,425 feet. A few inches below its top it carries a thin layer of basalt. The basalt is apparently intrusive, but is not definitely so, as there is no obvious scorching of the overlying sandstone. The underlying contact was not available. The following rocks down to 7,563 feet are composed of this same hard, coarse-grained sandstone (a few finer-grained and softer layers), together with somewhat larger amounts of hard, compact, deep bluish-gray to dark chocolate brown shale which shows a rather uniform dip of from 14 to 16 degrees. One small pecten, as yet unidentified, one fifth of an inch across, fairly distinct, and with both wings, was found in the shale of the deepest core or at 7,563 feet. This series is well-bedded, with clean divisions between the sandstone and shale.

The deeper series cored from 6,425 to 7,563 feet is with little doubt to be correlated with strata at Long Beach which have been described[1] as follows:

"Some of the deepest wells in the field have entered a formation different from the Fernando in appearance of the shale, and yet not typically Monterey (Miocene). This shale is hard, nearly black, and shows bedding planes dipping more steeply than those of the Fernando. An unconformity between the Fernando and these beds is indicated by the fact that they are not encountered at the expected depth in some of the deepest wells. Their age may be Upper Miocene."

The present writer considers the strata cored in No. 6 Athens of the Miley Oil Co. at Rosecrans between 4,334 and 6,407 feet to be of Pico (lower Fernando) age. The strata cored from 6,425 to 7,563 feet are believed to be older than the Pico formation.

The rocks exposed upon the edges of Los Angeles Basin, which appear to most nearly resemble those cored below 6,425 feet in this well, are included in a rather rare series of argillaceous and slightly diatomaceous shales with sandstones, sometimes mapped as the top of the Puente formation. If these rocks were subjected to pressure they would be similar to the lower cores mentioned. There is some evidence[2] that this series, which is restricted in outcrop, lies unconformably between the Pico and Puente formations. It may quite possibly be of Santa Margarita (Upper Miocene) age.

A little oil is produced upon the edges of Los Angeles Basin from sands which have apparently not been reached in even the deepest wells more centrally located. It is doubtful whether these sands will have a commercial value in the central parts of the basin, but they may yet raise the world record for deep oil production to 10,000 or more feet.

[1] A. T. Schwennesen, R. M. Overbeck, and H. H. Dubendorf, "The Long Beach Oil Field and Its Problems"; Bull. Am. Assoc. Pet. Geol., Vol. VIII, No. 4, 1924.

[2] J. E. Eaton, "A Contribution to the Geology of Los Angeles Basin, California," Bull. Am. Assoc. Pet. Geol., Vol. X, No. 8, August, 1926.

NORTH CENTRAL TEXAS

(Continued from Page 40)

ers were added to the list. The storage and pipeline congestion is gradually tightening up on the production situation in that territory and all save a few of the more fortunately situated companies are finding it increasingly difficult to market their oil. New wells continue to be given very light shots, on the whole, or none at all, and after completion are allowed to paraffin up in many cases.

The Canyon Oil & Gas Co., Dixon Creek Oil Co., Marland Oil Co., Phillips Petroleum Co. and a few others were mainly responsible for the decline of 589 bbls. in the daily production of the field last week and none of these could be called a natural decline. The potential output in each case far exceeds the actual amount that the wells were allowed to produce. Hutchinson County accounted for 504 bbls. of the decrease and Gray County 80 bbls., due to the decline of the Shamrock Petroleum Co.'s production, Carson County and Wheeler County remaining practically the same.

Wheeler County should show a substantial gain next week, however, as the Texhoma Oil & Refining Co.'s No. 1 Company (carried sometimes as Continental Oil Co.'s well) came in for 30 bbls. an hour at 2,224-35 feet and was deepened to 2,268 feet where it was rated a 600-bbl. well. It is located in Section 12, Block 27, H. & G. N. Survey. Wheeler County has been getting quite a play and this well will probably add some to the activity. At latest report it was holding up well.

Gray and Carson Counties

Gray County is due for some publicity shortly since a number of tests there are nearing the pay level. The Gulf Production Co.'s No. 1 Worley & Reynolds, in the NW cor. SE of Section 83, Block 3, a diagonal southeast offset to the Shamrock Petroleum Co.'s No. 1 Worley & Reynolds, was spraying oil Sunday at total depth of 2,970 feet and was due to drill in Monday.

In Carson County, the Gulf Production Co.'s No. 16 Burnett, Section 128, Block 5, was shot with 50 quarts at 3,090-3,110 feet, total depth 3,112 feet and bridged. It was being cleaned out. Marland Oil Co.'s No. A-3 Burnett was still flowing 1,375 bbls. Saturady.

The Amerada Petroleum Corp. brought in a good well north of the Canadian River in Hutchinson County on its "B" lease, in Section 89, Block Z, making 560 bbls. after a 200-quart shot, and the Gulf Production Co. also had a well good for 1,400 bbls. in its No. 21 Dial, SE cor. of the north half of Section 21, Block ZO2, offsetting Marland Oil Co.'s No. 2 Dial-Perkins. Gulf's No. 21 came in natural, marking it as one of the best wells north of the river.

In Section 20, Block Y, Marland Oil Co. has an exceptional lease on the Johnson land. These wells have been reported for large production during the past few weeks and it is interesting to note that No. A-4 flowed 5,090 bbls. Saturday; No. A-3, 1,390 bbls.; No. A-2, 710 bbls., and No. A-1, 640 bbls. The same company also has some wells on the Whittenburg lease, in the Mary Whitley Survey, just north of Section 20, which are holding up in fine shape. No. A-5 Whittenburg flowed 3,415 bbls. Saturday and No. A-6 flowed 1,212 bbls.

Hutchinson County Completions

Amarillo Oil Co.'s No. 4 Bivins-B, Section 13, Block Y-2, was completed for 70,000,000 feet of gas at 2,455-2,720 feet. Amerada Petroleum Corp.'s No. 4 J. A. Whittenburg, Section 89, Block Z, NE cor. NW, was shot with 50 quarts at 2,970-3,020 feet and made 325 bbls., then was shot again with 200 quarts and flowed 560 bbls. in the first 24 hours afterward. Big Creek Oil Co.'s No. 1 Cal Merchant, wildcat in Section 37, Block 47, H. & T. C. Survey, about 8 miles west of the big production, had 20,000,000 feet of gas at total depth of 2,540 feet. Buffalo Oil Co.'s No. 1 Smith topped the pay at 3,006 feet and was flowing 20 bbls. daily while drilling at 3,020 feet. This is in Section 14, Block Y.

Continental Oil Co.'s No. 1 G. A. Whittenburg pumped 20 bbls. of fluid, 20 per cent water, at 2,776 feet. Delmar Oil Co.'s No. 1 Johnson-Grace in Section 20, Block Y, swabbed 75 bbls. of oil and 4 per cent water at 2,912-75 feet. Derby Oil Co. and others' No. 1 Johnson swabbed 20 bbls. at 2,991-3,030 feet. This is in the NE cor. SW, Section 20, Block Y, in the big territory, and it is not completed. Goldeline Oil Co.'s No. 2 J. A. Whittenburg-A, in Section 27, Block 47, was flowing 100 bbls. natural at 2,921-66 feet. This is east of the Golding & Phillips small producer. It is not completed.

Marland Oil Co.'s No. 1 Perkins-Dial in the SE cor. of Section 1, Block X02, had the pay at 2,750-2,802 feet and was shot with 40 quarts at 2,774-95 feet, flowing 250 bbls.. No. 2 Perkins-Dial, in the NE cor. of the lease, had pay at 2,840-2,913 feet and after a shot of 20 quarts at 2,882-96 feet flowed 700 bbls.; No. 4 found the pay at 2,873-2,906 feet and was shot with 40 quarts at 2,875-95 feet, making 260 bbls.; No. 6 found pay at 2,786-2,810 feet and after a 60-quart shot at 2,770-2,800 feet made 300 bbls.. No. 8 Perkins-Dial had pay at 2,910-42 feet and was shot with 20 quarts at 2,910-20 feet, resulting in a 250-bbl. well. Marland Oil Co.'s No. 4 J. A. Whittenburg-A in the Mary Whitley Survey, just north of Section 20, Block Y, found the pay at 2,986-94 feet and was given a light shot of 30 quarts at the same depth. It made 50 bbls. afterward.

S. D. and W. W. McIlroy's No. 7 Smith in Section 14, Block Y, was not completed but was flowing 65 bbls. natural from lime pay at 2,857-2,971 feet.

Made Only 5 Bbls.

McMan Oil & Gas Co.'s No. 2 Johnson-Ray Wheatley, in Section 66, Block 46, was shot with 105 quarts at 2,838-2,901 feet, but made only 5 bbls. afterward; No. 1 J. A. Whittenburg-Archer in Section 65, Block 46, was a 75-bbl. well after a 140-quart shot at 2,805-41 feet; No. 2 was a 50-bbl. producer after a 135-quart shot at 2,844-2,915 feet; No. 3 made 100 bbls. when shot with 130 quarts at 2,844-2,918 feet. Midwest Exploration Co.'s No. 1 Johnson in Section 70, Block 46, was swabbing 75 bbls. at 2,660-70 feet and waiting on pipeline to complete.

New Domain Oil Co.'s No. 2 Kingsland in Section 4, Block Y, swabbed 100 bbls. at 2,880-89 feet and was completed. Phillips Petroleum Co.'s No. 1 Whittenburg-Haines in the Mary Whitley Survey, flowed and swabbed 200 bbls. at 2,918-65 feet and is to be shot; No. 2 was flowing 100 bbls. at 2,915-24 feet and is also to be given a dose of nitro. The same company's No. 1 Whittenburg-Patton in the same survey, pumped 75 bbls. at 2,966-88 feet. Phillips Petroleum Co. and others' No. 2 Johnson, also in the same survey flowed 150 bbls. at 2,970-3,020 feet. Phillips Petroleum Co. and Coble Oil Co.'s No. 14 J. A. Whittenburg, located along the north line of Section 13, Block Y, swabbed 75 bbls. at 2,960-93 feet. Phillips Petroleum Co. and Gibson Oil Co.'s No. 7 J. A. Whittenburg, along the west line of Section 63, Block 46, was flowing 50 bbls. from sand at 2,687-2,726 feet.

Prairie Oil & Gas Co.'s No. 5 Johnson-A flowed 80 bbls. from lime pay at 2,875-2,904 feet but was not completed. This is in the SW cor. of Section 64, Block 46. Same company's No. 12 Johnson-A in the SW cor. SE of Section 20, Block Y, was shot with 140 quarts at 2,952-3,048 feet, total depth 3,058 feet, and made 115 bbls. afterward: No. 14-A Johnson, in the NW cor. of Section 21, Block Y, made 100 bbls. following a 70-quart shot at 2,755-2,808 feet. Prairie Oil & Gas Co. and others' No. 8 Maggie Weatherly, NE cor. S half SW, Section 19, Block Y, swabbed 35 bbls. at 2,970-3,041 feet and is to be shot.

Relief Oil Co.'s No. 3 Smith in Section 11, Block Y, had 1,400 feet of oil in the hole at 2,675-96 feet and was fishing tools. Roxana Petroleum Corp.'s No. 4 Smith-B, SE cor. NE SW, Section 11, an edge well, was completed for 25 bbls. after a 120-quart shot at 2,810-40 feet, total depth 2,850 feet. Skelly Oil Co.'s No. 2 Johnson-Cunningham, along the south line of Section 4, Block B-4, made 20 bbls. after a 40-quart shot at 2,964-77 feet. Sunburst Oil Co.'s No. 2 Smith, NW cor. SW, Section 14, Block Y, was completed for 800 bbls. flowing natural from pay at 2,927-87 feet. This well was reported in the late fields last week as flowing 1,500 bbls. but had to be allowed to paraffin up due to lack of storage.

Carson County

American Refining Co.'s No. 6 Furnett Estate was temporarily abandoned at 2,960 feet.

Gray County

Wilcox-Pampa Oil & Gas Co.'s No. 4 Worley & Reynolds in the SW quarter of Section 62, Block 3, swabbed 300 bbls. from granite wash at 2,830-84 feet.

NORTH CENTRAL TEXAS
Estimated Production Week Ending September 4, 1926

	This Week	Last Week
Ranger District—		
Brown County	12,674	12,353
Callahan County	4,568	4,693
Coleman County	1,805	1,875
Comanche County	1,837	1,865
Palo Pinto County	439	449
Ranger County	5,693	5,713
Shackelford County	10,911	10,477
Stephens County	11,375	11,352
Total Ranger Dist.	49,302	48,777
Wichita Falls District—		
Electra	15,972	15,988
Burkburnett	12,137	12,111
Iowa Park	4,224	4,288
Archer County	30,061	29,899
Clay County	562	553
Wilbarger County	14,474	14,549
Montague County	6,787	6,749
Young County	8,205	8,285
Jack County	220	215
Throckmorton County	1,686	1,749
Baylor County	158	165
Cooke County	277	185
Total Wichita F. Dist.	94,763	94,736
West Texas District—		
Big Lake Field	28,439	28,378
Crane County	775	750
Crockett County	1,211	1,072
Howard County	233	250
Mitchell County	3,636	3,621
Scurry County	43	51
Upton County	6,433	4,230
Total W. Tex. Dist.	40,770	38,352
Grand total	184,835	181,865
Increase	2,970	

DAILY AVERAGE PRODUCTION OF AMARILLO DISTRICT

Company—	Wells	Daily Aver.
Amerada Pet. Corp., J. A. Whittenberg	1	60
Amerada Pet. Corp., J. A. Whittenberg-B	4	500
Amerada Pet. Corp., G. A. Whittenberg	2	70
American Refining Co.	2	135
Apex Oil Co.	2	375
Badger Oil Co.	1	50
R. C. Barnum	1	0
Canadian River Oil Co.	4	400
Canyon Oil & Gas Co.	2	3,000
Centrr Dome Oil Co.	1	0
Centerfield Oil Co.	1	0
Coble-Whittenberg	3	705
Continental Oil Co.	1	10
Currie Bros. and Phillips	1	1,080
Cockrell-McIlroy	2	860
Delmar Oil Co.	1	75
Derby Oil Co.	3	300
Devonian Oil Co.	3	685
Dixon Creek Oil Co.	21	9,080
Double 5 Oil Co.	1	65
Douglas Oil Co. and Cline	1	10
Dunnigan et al	2	315
E. J. Dunnigan et al	1	1,000
Echo Oil Co.	3	645
Empire Gas & Fuel Co.	4	855
Fly-Blackburn Oil Co.	2	220
Gates Oil Co.	4	370
Golding & Phillips	1	0
Gulf Prod. Co., Panhandle & Cline	28	5,260
Gulf Production Co.	15	4,335
Heywood et al	2	100
J. K. Hughes Development Co.	11	1,630
Holmes, Currie & McKnight	2	200
W. H. Holmes	1	180
Hutchinson County Oil Co.	1	10
Dan A. Japhet	2	475
J. H. Lenix	1	20
Lenix & Patterson	1	420
Lucky Ten Oil Co.	1	650
Marland Oil Co.	25	16,485
Midwest Exploration Co.	5	585
McMan Oil & Gas Co.	10	9,875
McIlroy & Herring	4	600
S. D. and W. W. McIlroy	3	725
McIlroy Bros. et al	3	380
J. H. Middleton	3	85
Murchison & Fain	1	296
Newby Oil Co.	1	55
New Domain Oil Co.	3	125
Phillips & Heywood	1	1,325
J. R. Phillips	1	25
Phillips Petroleum Co.	51	19,650
Prairie Oil & Gas Co.	15	3,175
Relief Oil Co.	2	575
Riley & Holmes	1	500
Roxana Petroleum Corp.	7	1,055
Ryan Petroleum Corp.	3	340
Shamrock Petroleum Co.	1	200
Skelly Oil Co.	12	6,215
Skiatex Oil Co.	4	1,675
J. L. Smith	1	70
Smith & Bynum	2	200
Spring Creek Oil Co.	3	900
Summit Oil Co.	2	420
Sunny Jim Oil Co.	5	600
Sunburst Oil Co.	2	2,800
Travelers Oil Co.	2	710

Triangle Oil Co.	1	1,025
J. D. Ward (Snell)	1	75
J. D. Ward et al	1	50
Westex Oil Co.	7	1,960
White Eagle Oil & Refining Co.	11	1,875
J. O. Whittington	1	0
Total Hutchinson County	335	108,776
Average per well		324
Carson County		
Amarillo Oil Co.	1	30
American Refining Co.	5	435
Gates Oil Corp.	1	10
Gulf Production Co.	13	385
Marland Oil Co.	12	2,110
W. W. Silk et al	2	80
Skelly Oil Co.	2	90
The Texas Company	11	245
Total Carson County	47	3,385
Average per well		72
Gray County		
Empire Gas & Fuel Co.	1	10
Shamrock Petroleum Co.	2	1,135
Wilcox-Pampa Oil Co.	5	2,520
The Texas Company	1	5
Total Gray County	9	3,670
Average per well		407
Potter County		
Amarillo Oil Co.	1	35
Wheeler County		
Gibson Oil Corp.	2	155
Continental Oil Co.	1	80
Midwest Exploration Co.	3	0
Upham Gas Co.	1	0
Total Wheeler County	7	235
Average per well		33
Grand total Panhandle	399	116,101
Average per well		291
Average per well last week		331
Total Panhandle 4 weeks ago	283	88,025
Average per well 4 weeks ago		311

FIRST REPORT OF FEDERAL OIL BOARD

(Continued from Page 31)

when free from constitutional questions, does not evoke popular support when its purpose is avowedly to put on brakes on development of natural resources. This stumbling block is recognized whether Federal or State legislation is proposed.

National Defense Requirements

Under its constitutional power to provide for the common defense, the Federal Government should continue to make and execute plans for an adequate supply of petroleum for all military and naval needs of the future. Tank storage sufficient to meet initial demand should be built and maintained intact against a war-time emergency. Underground reserves should be preserved to supplement the commercial supply as the next line of defense, and in the administration of these reserves of oil in the ground which form "an important part of the national insurance," future security not present economy should be the sole guiding principle.

Current peace-time requirements of those branches of the Government responsible for the national defense are approximately 20,000,000 bbls. of petroleum products a year. These requirements are adequately provided for under the present normal rate of production. In case of war, the national defense requirements would, of course, immediately increase many fold. This larger quantity would include the direct requirements, that is, the products actually used by the agencies of the Government engaged in national defense operations; and the indirect requirements—the amount which will be needed industrially to carry out the munition program, or other similar programs of these agencies.

The production from oil wells within the boundaries of the United States at present is in excess of the estimated maximum requirements for national defense in time of war.

Storage Reserves

The report of the Naval Oil Reserve Commission was made available to the Federal Oil Conservation Board, and, after consideration thereof, the board concurs in general with the conclusions and recommendation of the reserve commission. The board believes that steps should be taken to put into effect the principal recommendations therein, with such modifications as may be necessary in the light of information obtained subsequent to the submission of the report.

The war-time oil requirements of the Navy in any overseas campaign would probably include the major portion of the whole deep-water tonnage under the United States flag. The increasing use of internal combustion engine drives on commercial carriers makes liquid fuel more and more necessary for war-time water transport. The logistic services of the Army and Navy of its combat weapons such as tanks, tractor-drawn artillery, and airplanes, are dependent upon petroleum products for fuel and lubrication. Should the oil supply accessible to the United States become exhausted and no satisfactory liquid substitute be developed, it would be necessary to resort to coal for propulsion.

Our entire war-time reserve should not be in the form of refined products placed in tanks, for two reasns. First of all, the future needs of the Army and Navy for petroleum products may be in a ratio quite different from that of present use, and in view of the natural tendency of gasoline or even crude petroleum to waste when held in storage. A better policy is considered to be the storage of the higher grades of fuel oil or topped crude, from which the needed products could be derived.

Further, it is important that there should be an underground reserve in the event that our commercial supply becomes exhausted before that of other nations. This underground reserve should obviously not be drawn upon unless and until other sources become insufficient.

Inquiry Will Continue

The board's inquiry will continue a search for pertinent facts. The Government as the largest landowner is committed to practical conservation of irreplaceable raw materials, by the protection of the public estate and the guidance of its development. Especially is such an obligation sacred and inescapable as it concerns the great sources of energy, the coal and petroleum deposits in Government ownership.

State governments should promptly study the economic advantage of co-operative action by landowners and oil operators, looking toward sane development of new fields and consider legislation authorizing co-operative agreements, under proper safeguards. And state legislation, with the declared purpose of conservation, should be enacted to stop the waste of gas, the loss of its content of gasoline, and the even greater loss incident to reduction of gas pressure in the oil sands.

States Should Co-Operate

There should be active co-operation between the oil producing states in the study of proposed legislation to the end that uniform laws may be enacted, or even agreements or compacts entered into between the states, subject to ratification by Congress. Even more pronounced should be the co-operation between the state agencies having authority in the regulation of oil and gas production, and the Federal bureaus, whose investigative fields are essentially coterminous with the administrative jurisdiction of the state organizations. Such co-operation would be especially effective in the oil fields of the public-land states where Federal leases and reserves are scientifically supervised by Federal engineers, who can attain best results only with the full co-operation of the state officials. An excellent beginning in this co-operation is already in force.

Co-Operation Within Industry

Co-operation within the industry can effect economies all along the line. In development and production, a better balancing of supply to demand, when and where the oil is needed; in transportation, better planning, thus avoiding cross-hauls of crude and cross-hauls of products; in distribution, less duplication of marketing facilities, which at times even involve an expense equal to the cost of production and refining. Large savings in both production and refining are possible through the general adoption of the best technique already used by the more progressive units.

Co-operation within the industry is recommended in both research and action, in discovering the best practice and in adopting it. Field co-operation between neighboring operators in preserving back pressure and reducing the gas factor is an example of practical conservation, or if it is too late to do this, field co-operation can take the form of building up pressure by artificial means. United and co-ordinated effort is the method recommended.

The complete organization of co-operative effort is recommended, with simple but effective working units that will insure full contact of the industry with both State and Federal Governments and continuous contact between all operators in an oil field. Co-operation of the industry with the Government in planning and carrying out research is necessary, to make full use of all the facilities, resources, and personnel available.

The President, The White House, Washington, D. C.

HUBERT WORK, Chairman
DWIGHT F. DAVIS
CURTIS D. WILBUR
HERBERT HOOVER.

NEW PHILLIPS DIRECTOR?

The Wall Street Journal says: The Phillips Petroleum Co. is earning at the rate of approximately $3,000,000 a month after depreciation, taxes and all charges except depletion. The company is expected to announce soon a new board member. One of the present members of the board desires to retire and his place will be taken by a man closely connected with one of the most important financial and railroad groups in the country. He is a large stockholder and very optimistic regarding the continued and increasing importance of the company as a result of his recent trip to the various properties and plants. He was particularly impressed with the high ability of the management and the gratifying results being obtained in the various departments of the company's activities.

DIVERSIFIED INDUSTRIES HAVE BRILLIANT FUTURE

(Continued from page 31.)

in any way to the parent compounds. The subject must be approached from this point of view if marked advance is to follow."

Studies in Combustion

Other papers presented before the Petroleum Division of the American Chemical Society, emphasized the important work being done in connection with fuel and lubricating oil in automobile engines, and gave some indication of the revolutionary changes going on affecting both the oil and automotive industries.

Results of studies in combustion in gasoline engines conducted by the General Motors Research Corp. were given by Wheeler G. Lovell and John D. Coleman with T. A. Boyd, these studies consisting of (1) the determination of the rate of burning by chemical analysis and (2) the burning mixtures of hydrogen and carbon monoxide. The same authors presented a paper on "A Laboratory Method of Determining the Starting Properties of Motor Fuels."

In the first of the studies of combustion in gasoline engines it was pointed out that as a departure from the usual methods of investigating combustion in gasoline engines, a study was made of the burning during its actual progress, and from a chemical point of view. The final products of combustion, as represented by the constituents of the gas exhausted from the engine, indicate that the overall burning reactions are quite definite, and that they are conditioned by the initial mixture and by the type of combustion. The ordinary method of examining combustion by way of the engine exhaust is subject to the disadvantage that the burning takes place so long before the exhaust stroke that the final products do not give definite information as to how the actual burning has proceeded. It is important, therefore, to sample gases from the cylinder during the actual explosion. For this purpose, a special quick-action water-cooled sampling valve has been devised which makes it possible to follow the course of the burning and to determine its rate.

It appears from the results obtained that the combustion of gasoline proceeds in such a manner that there is no sudden change from burned to unburned gases over a small time interval, as might be inferred from the usual flame concept. The effect of the knock is to increase the rate of burning of gasoline, whether the detonation is caused by addition of kerosene, by the presence of a chemical knock inducer, or by an increase in compression. The burning of gasoline in the presence of lead tetraethyl proceeds at about the normal rate.

An abstract of the second study covering "The Burning of Mixtures of Hydrogen and Carbon Monoxide," follows:

In a continuation of previous work upon the rate of burning of fuels in gasoline engines, experiments have been made upon the simultaneous combustion of mixtures of hydrogen and carbon monoxide. The results of these experiments indicate:

(1) That the reactions for the burning may be represented:

$$2H_2 + O_2$$
$$2CO + O_2$$

(2) That the ratio of the velocity constants for these reactions is 2.2:1, hydrogen burning over twice as fast as carbon monoxide. This is in fair agreement with a value of 2.8 obtained elsewhere by other investigators under conditions of burning in flues.

(3) That the effect of an increase in compression ratio from 4.5:1 to 6.0:1 of of the presence of lead tetraethyl or ethyl nitrate does not change the mechanism nor the relative rates, when the combustion is not accompanied by knock.

(4) That there is no substantiation, in the data obtained, for the usual concept of a flame front advancing progressively across the combustion chamber.

Starting Properties

In the paper on "A Laboratory Method of Determining the Starting Properties of Motor Fuel" the authors said that:

One of the most important properties of a motor fuel is the ease with which engines may be started on it. The starting characteristics of any given fuel are a complex function of its physical and chemical properties, and of the temperature of its mixture with air. Hence, the starting characteristic is a property which cannot be determined accurately from conventional distillation curves, or from dew points and similar measurements.

Ease of starting may be determined directly in an engine, of course, when proper means are provided for controlling conditions. But, since a large amount of equipment is needed for such a test, an attempt has been made to devise a laboratory method of determining the readiness with which an explosion may be obtained with any given fuel at the temperature desired. This method consists in measuring directly the air-fuel ratio necessary to produce an explosive mixture at any given temperature. It has been applied to the testing of a considerable number of fuels of widely different properties, over a broad temperature range, and has been found to yield results that are comparative with those obtained in starting tests on actual engines.

Cause of Detonation

Drs. George Granger Brown and G. B. Watkins, of the Department of Chemical Engineering, University of Michigan, presented a paper on "The Probable Cause of Detonation in the Internal Combustion Engine," with the following interesting conclusions:

"Previous work has shown that an increase in the initial temperature decreases the velocity of flame travel, the rate of rise of pressure, and the tendency to initiate the detonation wave, in all progressive homogenous reactions; and increases the rate of rise of pressure and tendency to detonate in internal combustion engines and in bomb explosions where autoignition occurs. It has also been shown that the rate of rise of pressure upon explosion in a progressive homogeneous reaction is the major factor in indicating the tendency to initiate the detonation wave, but is not the major factor in indicating the tendency of a mixture to 'detonate' in internal combustion engines.

"It is well known that hot surfaces in the combustion chamber of an engine increase the tendency to knock or 'detonate' and that these hot surfaces are well above the ignition temperature of the explosive mixture. Following the suggestion of Woodbury, Lewis and Canby (1921), sup-

ported by our subsequent work, that the engine knock is caused by some form of autoignition, it was found that if the maximum rate of rise of pressure as determined in a progressive homogeneous reaction under constant initial conditions be divided by the autoignition temperature on the absolute temperature scale, a number is obtained which varies directly as the knocking tendency of that particular fuel in an engine, or inversely as Ricardo's 'Highest Useful Compression Ratio' for that fuel.

Fuel—	Maximum Rate of Rise of Pressure	Auto-ignition temp. in degrees Kelvin (Moore)	Product of max. rate of rise of pressure and reciprocal of auto-ignition temperature	Ricardo's highest useful Comp. ratio	Compression ratio calculated, with toluene as basis of comparison
N-Hexane	47,500	560	84.8	80% hexane 5.1	5.36
N-Heptane	61,500	554	110.8	97% hexane 3.75	4.1
Benzene	63,000	893	70.5	6.9	6.45
Toluene	56,500	869	65.0	99% toluene 7	7.0
Xylene	47,000	757	62.2	7	7.3
Me. Alcohol	52,000	779	66.7	*5.2	6.8
Et. alcohol (absolute)	39,500	668	59.1	98% Et. Alc. 7.5	7.7

*Preignition occurred before audible detonation.

"These data clearly indicate a different type of reaction in the engine than in the bomb. From direct photographic evidence the bomb explosions are known to be progressive homogeneous reactions. Therefore, detonation in an engine cylinder is due to a heterogeneous or at least a compound hertero-homogeneous reaction (autoignition). This contention is further supported by the fact that engine knocking may be eliminated by efficient cooling of the overheated areas such as exhaust valves in the combustion chamber. This explanation of detonation in internal combustion engines is the first which seems adequate to explain the engine knock under all conditions and specific two properties of fuels which determine their relative knocking tendency."

Knock Characteristics

In a contribution from the Research Laboratories of the Ethyl Gasoline Corp. on the "Measurement of Knock Characteristics of Gasoline in Terms of a Standard Fuel," Graham Edgar, stated that no method is known at present for any absolute method of measuring the knock characteristics of fuels. All methods consist essentially in comparing the performance of two different fuels. It is highly desirable that a reproduceable standard fuel be developed to serve as a primary standard, thus permitting a comparison of the results of different methods. It is possible by mixing normal heptane and a new synthetic octane to duplicate the knock characteristics of any commercial gasoline. It is proposed to utilize these mixtures as primary standards in rating the knock characteristics of fuels.

Composition of Gasoline

J. B. Hill, L. M. Henderson and S. W. Ferris, presented a paper on "The Composition of Gasoline as Indicated by Close Fractionation." Gasolines obtained from different sources have been fractionally distilled and each 2.5 per cent primary cut assayed. Their average boiling range was about 6 degrees Centigrade but in individual cases the boiling ranges were less than 3 degrees Centigrade. Curves have been drawn showing the 50 per cent boiling point of successive fractions plotted against their specific gravities and refractive indices. These curves have been compared with similar curves for pure hydrocarbons. The values for pure naphthenes lie closer to the points obtained with gasoline derived from a naphthenic crude than those obtained from gasoline of a paraffinic crude. There are, however, sharp peaks and troughs in all the gasoline curves and the breaks fall in similar positions for each sample irrespective of source; whether Californit, Mid-Continent or Pennsylvania crudes. Certain fractions of each gasoline are far more naphthenic than neighboring cuts. The fractions falling on the peaks and in the troughs of these curves have been re-fractionated and examined chemically and physically.

Tetraethyl Lead

Abstracts of some of the other papers presented follows:

"Some Reactions of Lead Tetraethyl," by Owens Hand Browne and E. Emmet Reid.

The methods for making triethyl-lead chloride, hydroxide and acetate have been improved. Silica gel has been found to be an excellent catalyst for causing acids to act of lead tetraethyl. Some salts of tri-ethyl lead have been made by double decomposition from the acetate, others have been prepared by the direct action of the acids on lead tetraethyl in presence of silica gel. The propionate, isobutyrate, valerate, isovalerate, caprate, heptoate, caprylate, pelargonate, chloracetate, dichloracetate, trichloracetate,bromacetate, dibrom-acetate and tribromacetate have been obtained. Some other salts seem to be formed but could not be purified. Other reactions have been studied.

Lubricating Oils

"Measurement of the Bloom of Lubricating Oils," by L. M. Henderson and H. C. Cowles, Jr. A method is given for measuring quantitatively the color and intensity of light reflected from oil surfaces. An Ives Tint Photometer has been so modified as to permit the light from an external source of standardized intensity to fall upon the surface of the oil at a fairly definite angle. The reflected light is compared with the standard light by means of the filters supplied with the instrument. The amount of each of the principal colors is read on a logarithmic scale. The absorption thus noted is plotted against wave length and the shape of the curve shows the color and relative brightness of the bloom. The influence of temperature on the bloom has been investigated as well as the effect of blending of different types of oils.

"A Cryoscopic Method of Determining the Benzene Content of a Motor Fuel," by L. M. Henderson. Drapier has suggested that the percentage of a component A_1 in a mixture F can be ascertained if it is possible to measure the lowering of the freezing point produced by the mixture F (solute) in A_1 used as solvent and also the lowering effected by the mixture F in some other solvent which is not an ingredient of F. The suggestion is here applied to the determination of benzene in motor fuels by measuring the lowering of the freezing points produced by the fuel in glacial acetic acid and in benzene. The method is tested on blends containing various amounts of benzene and an equation is given for calculating the per cent benzene in the mixtures.

"The Determination of Wax in Intermediates" by L. M. Henderson and S. W. Ferris. The acetone method for the determination of yield and melting point of wax, as given in Bureau of Mines Bulletin No. 368, is not applicable to samples containing more than 10 per cent of oil. A method has been developed, using nitrobenzene as the oil solvent, by which the yield and melting point of wax may be determined in intermediates containing as much as 60 per cent or more of oil. An apparatus has also been constructed in which the entire process of separation, complete removal of nitrobenzene, weighing and determination of melting point may be carried out without transferring the sample.

Antioxidants

"Prevention by the Use of Antioxidants," by Brian Mead and W. L. McCabe. Of 177 compounds which have been tested, 48 have been found to exert an inhibitory action on the deterioration of mineral oils, as evidenced by sludge formation. Of these, the outstanding ones are lead tetraethyl, sulphur, introcresol and introbenzone. Thanks are due the Standard Oil Co. (New Jersey) for permission to publish these results.

"Mechanism of Static Deterioration of Transformer Oils," by Brian Mead, E. F. Dirks and W. B. Bader. The deterioration of a commercial transformer oil has been investigated at 150 degrees Centigrade, sludge and acidity development being the criteria. The influence of the presence of deteriorated oil on good oil has been demonstrated.

"Influence of Lead Tetraethyl," by Brian Mead and John C. Pope. The influence of small amounts of lead tetraethyl on the sludge formed by transformer oil has been determined quantitatively at a number of different temperatures.

"The Evaluation of Turbine Oils," by T. H. Rogers and C. E. Miller. The deterioration which turbine oils undergo in service is due to oxidation. This oxidation has been studied and a test has been developed in which the oil suffers in relatively short time changes which parallel those in actual service. Oxidation is carrier out at 210 degrees Fahrenheit in the presence of iron, and determinations of acidity, Herschel demulsibility and sludging time serve as the criteria in evaluating the quality of the oil. Comparisons between laboratory tests and test runs in plant turbines are given.

"An Investigation of the Changes in Some of the Physical and Chemical Properties of Four Unblended Mineral Oils Produced by Prolonged Treatment With Ozone," by Dover O. Cromwell, Johns Hopkins University. The effect of prolonged treatment with ozone upon various physical and chemical properties of four mineral oils has been investigated and an attempt has been made to show some relation between these changes and the variation thus produced in the static coefficient of friction as measured by the Deeley machine between steel surfaces. The oils used are in each case unblended. Two are asphaltic base oils and two are paraffin base oils.

Lubricating Greases

"Lubricating Greases" by James McKee. Comparing ingredients used a decade ago and those utilized today. Noting the different stages of development such as the elimination of nonlubricating materials. Economical changes in manufacturing methods, thereby producing superior finished greases. Defining proportions of materials used and describing manufacturing methods employed in making calcium and sodium base greases. Recent research brings radical changes in plant construction and fatty materials. Pressure action on regular fats hastens saponification. Specific treatment of fats reduces quantity without altering finished grease consistencies. Over three hundred degree C.M.P. lubricants are produced from pure fats and paraffin oils. How ordinary fats are being replaced advantageously by petroleum fatty acids.

"A Direct Refractometer Method for the Determination of Oil in Paraffin Wax," by S. H. Diggs and C. C. Buchler. For refined and semirefined waxes, the index of refraction (140 degrees Fahrenheit) of the sample is determined. Approximately 50 gr. is filtered through 50 g. of Attapulgus clay and the index of refraction of the "oil-free" filtrate is obtained. This value represents the zero per cent oil point of a curve of index of refraction versus per cent oil. A wall chart has been constructed having a movable brass arm shaped to this curve and pivoted at the 100 per cent oil point. The movable end is set at the zero per cent oil point as determined above, and the per cent oil corresponding to the index of refraction of the sample is read directly from the lower edge of the arm.

Deterioration

"Deterioration of Mineral Oils—Mechanism of Oxidation and Action of Negative Catalysts," by R. T. Haslam and P. K. Frolich. A detailed study of the oxidation by a dynamic method of the highly refined Parke-Davis mineral oil has made possible certain definite conclusions as to the mechanism of the oxidation process. The start of oxidation is manifested by change in color, increase in acidity and viscosity. A change in one of these properties is invariably connection with a corresponding change in the others. The rate of oxidation increases with elevation of temperature and is about five times as rapid with oxygen as it is with air. The susceptibility to oxidation is somewhat dependent on the previous history of the oil and is increased by preheating the oil even in nitrogen. Moisture does not affect the rate of oxidation at the temperature of the accelterated test, 130 degrees Centigrade. Ultimate analyses prove that no oxygen is taken up by the oil until the oxidation can be detected by either one of the above variables. Only a fraction of the oxygen taken up goes to the formation of acids, the remainder being present in the oil in the form of asphaltic bodies resulting from condensation (polymerization) of intermediate products of oxidation. With increasing temperature the viscosity increases more rapidly than does the acidity, probably on account of relatively more condensation taking place. Aldehydes are not stable in oxidized oil, but are immediately condensed to higher molecular compounds or further oxidized to acids. The asphaltic condensation products, responsible for the increase in viscosity, are not formed from acids. The viscosity and acidity of the oil do not change when an oxidized sample is maintained in the absence of oxygen even at a temperature of 130 degrees Centigrade. A number of organic compounds have been found to act as inhibitors of the oxidation. Others have been found to act as positive catalysts or not to affect the process at all. In the case of negative catalysts, the oil apparently remains unchanged during the period of incubation. After this period, the oxidation proceeds as for the pure oil. On the basis of the above conclusions a scheme for the mechanism of the oxidation of mineral oils has been proposed. The stage of oxidation which is affected by negative catalysts is shown to be the initial oxidation of hydrocarbons to alcohol.

"Mechanism of Static Oxidation," by Brian Mead, A. C. Phelps, C. R. Washburn and J. P. Warner. A preliminary series of experiments has been performed using a static method of determining the oxygen absorption by mineral oils at temperatures not higher than 130 degrees Centigrade. The results of the oxidation viz. sludge and acidity have been determined. It is possible to draw the following tentative conclusions:

1. Temperature markedly affects the rate of oxygen absorption, the temperature coefficient being 2-5 per 10 degrees Centigrade.

2. Over the comparatively small range of surfaces of oil investigated, the amount of surface exposure has no measurable influence on rate of oxygen absorption at 120 degrees Centigrade.

3. Both at 120 degrees and at 130 degrees Centigrade the rate of oxygen absorption by oils may be represented as a straight line function of time.

4. Sludge formation and acidity development both start very slowly and their rate increases as the experiment progresses. There is some evidence that sludge formation is catalysed by acidity development.

5. The rate of oxygen absorption seems to be proportional to the degree of unsaturation of the oil.

"On Saturation of the Petroleum Hydrocarbons as Shown by Their Reaction With Bromine," by Charles F. Mabery: "For some time I have observed the explosive action of bromine on the petroleum hydrocarbons, and recently I have taken up the study of this reaction with solvent fractions and with distillates. This note briefly describes the method as now applied, and it is presented here for some time may elapse before the results now in prospect are completed.

"In brief, the oil is dissolved in car-

bon tetrachloride and the theoretical amount of bromine gradually dropped from a graduated burette into a flask containing it, with a side tube dipping into another flask containing water. The bromine quickly reacts in the cold and the reaction is completed by heating gradually in hot water to 50-60 degrees. The hydrobromis acid evolved is washed out of both flasks, made up to a definite volume, and after removing the small amount of bromine that escapes the reaction, is titrated. Direct sunlight does not seem to aid the reaction. The brominated solution is evaporated on the water bath, dissolved in ether, a little alkali added to remove any possible bromine remaining, washed, dried with calcium chloride, the ether evaporated, and the oil finally dried in vacuo over sulphuric acid. The bromine substituted oils are apparently stable under these conditions, but are decomposed in the air bath at 100-120 degrees with the elimination of the elements of hydrobromic acid.

"As an example of this method, the following data were obtained with a solvent fraction that distilled at 280-282 degrees, 30 m.m. pressure from an Illinois oil, and with another that distillated at 275-280 degrees, 30 m.m. pressure from a Pennsylvania oil:

Oil—	Specific Gr. Oil	Specific Gr. Br.Deriv.	Pct. Br. Fd.	Pct. Br. Req.	Mol. Wt. Oil Fd.	Mol. Wt. Oil Req.	Mol. Wt. Br. Deriv. Fd.	Mol. Wt. Br. Deriv. Req.	Symbols Oil	Symbols Br.Deriv.	Grs.HBr from 10grms. Fd.	Grs.HBr from 10grms. Req.
Pennsylvania	.8662	1.005	15.87	16.16	408	416	496	491	$C_{30}H_{50}$	$C_{30}H_{55}Br.$	1.9	1
Illinois	.9047	1.138	18.16	18.22	359	360	437	439	$C_{26}H_{48}$	$C_{26}H_{47}Br.$	2.3	2

"The series C_nH_{2n-4} is assumed for these hydrocarbons from knowledge gained by previous analyses of the proportions of carbon and hydrogen in similar oils. The bromine derivatives react readily with potassium cyanide with the aid of finely divided metallic copper, also with silver cyanide and saponification gives dense oily acids resembling the napthenic acids from petroleum.

"While it cannot be assumed that fractional separation has been carried far enough to separate pure individual hydrocarbons from the crude oils, since it appears in general examination that these oils are composed of hydrocarbons with boiling points 10 to 20 degrees apart, those here presented should approximate to a definite composition.

"This reaction with bromine seems to be general for the wide variety of oils that have been examined, even including what may be regarded as typical asphaltic oils that yield lubricants such as the Russian (Baku) and Texas Sour Lake oils. Bromine appears to react less readily on the hydrocarbons from these and the Appalachian crudes than on the constituents of the Mid-Continent crudes."

"Gravity of Paraffin Wax," by F. J. Morris and L. R. Adkins. Difficulties in determining the gravity of solid paraffin wax are found to be due to dissolved air and the large shrinkage at the solidifying point. There seems to be a change in the expansion coefficient at this point, so that the gravity of solid wax cannot be determined from the gravity in the melted condition. Best results on wax at intermediate temperatures were obtained with a special type of Nicholson hydrometer.

"The Thermolability of Hydrocarbons." by James B. Conant, Harvard University. "During the last few years certain facts have been discovered in connection with a study of 'free radicals' which may have considerable bearing on the 'cracking' of petroleum. It is the purpose of this paper to call attention to these facts and to discuss the possibility of further investigation along these lines.

"The Prediction of the Flashpoint of Blends of Lubricating Oils," by Ernest W. Thiele.

INDIANA MARKETERS

The fall meeting of the Indiana Independent Petroleum Marketers Association will be held Tuesday, September 14, at the Columbia Club, Indianapolis. The day will be spent in informal discussions of jobber problems. Sam Hurd, 120 West Eighth Street, Connersville, Ind., is field secretary of the association.

CONSERVATION OF NATURAL GAS URGED BY CALIFORNIA SUPERVISION

By R. D. Bush*

The decided trend of declining production and increasing demand leaves no doubt as to the importance of conserving and protecting from damage the known deposits of natural gas in California.

Almost the entire production of natural gas is that associated with and produced with oil, while in some fields such as Long Beach, Santa Fe Springs, Rosecrans and Dominguez, considerable volumes of dry gas under high pressure in zones above the oil measures have been cased off with water sands at wells producing the underlying oil. Protection of this gas at many wells is merely the circulation of mud fluid during drilling and this has proved to be inadequate in many cases.

Experience in Elk Hills and Santa Fe Springs in the past has shown the necessity of being prepared to cope with gas blowouts, and such precautions have been taken in most cases. The more recent instances of gas getting beyond control in the Long Beach Field show that precautionary measures should be taken in all cases to safeguard property, as well as prevent undue waste in this resource.

Where gas is found above the oil measures unassociated with the oil, it is desirable to confine this gas to its nautral strata and prevent waste by dissipation or by infiltration of water into the gas-bearing sands. This work should be thorough and efficient beyond a question of doubt in all wells. Anything less than this at a few wells would defeat the whole plan of conservation, and undo all work performed to that end in the field.

Where the gas is associated with and necessarily produced with the oil, its conservation is accomplished by keeping the gas-oil ratio as low as possible to obtain the maximum ultimate production of oil.

The best data on the efficiency of protection of gas unassociated with oil will be obtained when it is desired to produce the gas at a later date. Dissipation or damage may take place without visual evidence of it at the surface. Only that type of waste evidenced by blowouts or escape of gas at the surface is given any serious consideration by many operators. There is a strong tendency to assume that where gas is prevented from escaping at the surface, conditions underground are satisfactory. Such a conclusion, however, is not always warranted. Unless conservation or protective work has been carried out to a degree that assures permanency of the work, migration of gas from high pressure to low pressure strata will take place underground, evidence of which may or may not eventually appear at the surface.

Instances of lack of precaution and inadequate protective measures resulting in costly blowouts and fire, as well as underground damage, recently occurred in the Long Beach Field.

High Pressure Zone

The first direct evidence of the existence of a high-pressure gas zone in the "Northwest Extension" of the Long Beach Field, was given during the night of January 14, 1926, when George W. Johnson's well No. 4 started blowing dry gas and fresh water mud from between the 8¼-inch and 15½-inch casings. How long, previous to this date, the gas, supposedly confined to its natural sand reservoir, had been escaping from it and dissipating before it appeared at the surface is unknown.

The 8¼-inch casing was cemented at 4,335 feet with 750 sacks of cement and had been standing 30 hours when the blowout occurred. After blowing gas and mud for about four and one-half hours, the well sanded bp, and upon entering the hole several days later it was found impossible to re-establish circulation and get back inisde the 8¼-inch casing, which had fallen away into the cavity. While working at 1,420 feet, the 15½-inch conductor casing finally collapsed into the hole, and it became necessary to skid the rig and start a new hole.

A calculation of the amount of cement used indicates that it should have reached from the shoe of the 8½-inch casing at 4,335 feet up to about 3,300 feet, and as there was no evidence of cement in the mud blown from the well, it would seem certain that the gas zone exists above that depth. The fact that excellent showings of oil were obtained in drilling this well between depths of 2,500 and 2,650 feet indicates that the gas zone is located even higher, and this is now generally thought to be the case.

No other evidence of gas in large volume was shown by wells in the area until about 10 a. m. February 23, 1926, when a fire and another gas blowout destroyed two rigs in the immediate vicinity of George W. Johnson's well No. 4. These wells were E. E. Combs Business Trust's No. 3 well and No. 5 and George W. Johnson's well No. 5. Numerous other wells in the neighborhood were disturbed at this time.

The fire occurred at Combs well No. 5, and its origin was directly attributable to gas escaping through crevices in the ground under and around the rig. The gas caught fire near the engine house of the rig, from a glue pot in use by some tank builders, and the flames spread rapidly to the derrick. At this time the well was standing cemented with 8¼-inch casing at 4,350 feet and the drill pipe had just been run into the hole preparatory to drilling out the cement.

The extent of the fire was greatly increased by a break in the Gilmore Oil Co.'s pipeline just across the street to the south of the Combs well. The break was in a gravity line from George F. Getty, Inc., well No. "L. B." 11 and the source of the oil was not ascertained until the fire had been extinguished at 4:30 p. m.

Other Wells Affected

The first evidence of gas noted at George W. Johnson's well No. 5 was at about 12:30 p. m. when gas began escaping in large quantities from the cellar. At that time the operator had been sidetracking at 3,645 feet and was within a few feet of the former bottom. The drill pipe had been withdrawn from the hole when the fire started, and was standing in the derrick. The volume of the gas flow, which came around the 15½-inch conductor casing on the outside, increased to the extent that the derrick supports were undermined and the derrick collapsed, dropping the drill pipe through the floor to about half its length into the cavity. The well continued to flow mud and dry gas until about 4:30 p. m. when it sanded up.

Other neighboring wells which were affected at the time were: The McKeon Oil Co.'s No. 7, which blew dry gas from around the conductor casing, a blowout being prevented by mudding and dumping concrete and cement in the cellar; Bessemyer & Yerke's No. 12, where gas in considerable volume was noted coming from the cellar; Marine Corp.'s No. 54, which was standing cemented at 4,365 feet. The latter well had been taking mud between the casings, prior to the blowout and fire, at the rate of about 50 bbls. per 24 hours. During the blowout the well took about 150 bbls. of mud fluid.

Later investigation showed that Combs well No. 5, at which the fire started, blew gas and mud from around the conductor casing at some time during the fire. The volume of mud and material was small, probably because the gas pressure at this well was being dissipated through cracks in the ground radiating for a distance of nearly 100 feet from the well. An examination of several of these fissures showed the largest to be about 2 feet wide and 20 feet long.

It is evident that protective work at these wells, consisting of circulation of mud fluid only while drilling, was not sufficient to confine the gas to its native stratum. The cost of the disaster far exceeds what would have been the cost to adequately case the wells and securely seal the formations containing oil and gas left behind the water strings.

Mudding by circulation while drilling in itself has proved to be insufficient. Supplemental mudding in some form must be performed to insure permanency of a sealed condition behind the water string. Where the depth of gas-bearing formations is comparatively shallow, the hydrostatic pressure should be augmented by pump pressure in order to thoroughly seal the formations and hold the gas within its reservoir, and prevent the movement of any fluid back of the casing.

Gas engineers representing many organizations, as well as the public, are devoting much time and study to questions involving the supply and conservation of gas. It is recognized by all that the natural supply is being rapidly diminished while the chances of new discoveries adequate to meet the growing demand are less and less favorable. Any indifferent attitude as regards protection of gas deposits should not be countenanced by the oil industry or the public.

The Department of Petroleum and Gas is justified in requiring more efficient protection for dry gas zones which are cased off to produce from underlying oil sands. Free and open circulation of mud fluid during drilling has proved inadequate and there remain pressure mudding and the use of more casing as reserve methods, and which have proved to be reasonably efficient in the past, especially in Kern County.

If fair consideration were given to the cost of protection, compared with the future value of dry gas, when that produced with oil is exhausted, there would be no question on the part of oil producers about spending a little more money and time to effectively seal reservoirs of gas and prevent waste in any form both underground and at the surface.

*California State Oil & Gas Supervisor.

POLITICAL BEARING OF OIL IN ALBANIA

LONDON, Aug. 28.—Writing in Oil News on the reported strike of oil in Albania, Arthur Wade, D. Sc., A. R. C. Sc., F. G. S., M. I. M. M., M. I. P. T., etc., says:

The current news that oil has been struck at shallow depth on the Mediterranean shores in Albania must give rise to the thought that it may develop into a field. It would be the first oil field so beneficially placed. The news is far too important to be regarded merely as an interesting item for oil men. It is full of commercial and political potentialities. The results that may ensue in eastern Europe, if this line of news, modest and obscure in most of the newspapers, should mark the beginning of a type of rapid growth and activity to which we were more accustomed in the past century, baffle the imagination.

It was a good many years before the war that I became aware of the possibilities that existed in Albania for oil field development. While working in neighboring territory, an Albanian servant brought to my camp in the mountains fragments of an oil sand derived from the very locality in which the recent discovery has been made. These fragments, saturated with crude petroleum, filled me with the desire to know more about their place and mode of origin. It was not till early 1923 that the opportunity came to visit the spot, and there I found an oil sand practically forming the flanks of a mountain range. Bituminous matter of the consistency of treacle was running from it in places to

such an extent that the peasants of Patos and Visoka were able to augment their small resources by collecting and selling it in the markets of Berat and Fieri.

Other Oil Evidences

But this is not the only evidence of the existence of oil that is to be found in southern Albania. Deposits of bitumen occur which are so important that they have long been worked on a commercial scale by an important Italian company, and large quantities are shipped from Valona to Italy—so large that a concrete jetty has been specially built for that purpose by the company at Valona. Of more importance is the fact that seepages of crude oil of good quality are also known.

During the military occupation of this part of Albania by the Italians, military engineers made an attempt to drill an oil well at Drasciovitsa, about 8 or 10 miles to the south of Valona. Although their efforts ended in the loss of the well, oil was flowing from around the casing and running down a small watercourse at the time of my visit to the spot in 1923, and still flowing when I again examined the locality at the end of 1925. The Italians must have abandoned the place in haste, for drilling plant, machine shops, tools of every description, including lathes and other machine tools and much other material, remained very much as they had been left.

The general impression of Albania is that it is an extraordinarily rugged and mountainous country. So it is in the interior; but towards the coast it is a country of plains and low hills. In times of rain the plains are likely to be flooded by the rushing torrents which come down from the mountains; and the traveler may be held up for many days in a country where roads are poor to bad, and bridges do not exist.

Points From the Geology

Strata, chiefly of Tertiary age, ranging from the Nummulitic limestones to Pliocene deposits, cover this region. Clays, marls, and sandstones predominate in the upper beds, while limestones become important below. Oil occurs in the upper Miocene deposits, which tend to overlap the underlying strata. There is evidence in places that the oil has tended to migrate along the plane of unconformity.

CRUDE PRICES

(Continued from page 159.)

†Calion (East El Dorado) 1.10
§Urania (August 26) 1.10

Other companies posting in these fields are: Gulf Pipe Line Co.; Atlantic Oil Producing Co. in Homer, Haynesville, El Dorado and Smackover; The Texas Company in Caddo, Bull Bayou, DeSoto, Crichton and Smackover.

*Posted by the Atlantic Oil Producing Co. †Posted by the Gulf Pipe Line Co. §Posted by the Louisiana Oil Refining Corp.

ROCKY MOUNTAIN STATES
Ohio Oil Co.—Midwest Refining Co.
(Effective May 17)

Rock Creek (Wyo.)	$2.25
Salt Creek—	
29° to 29.9°	1.73
30° to 30.9°	1.81
31° to 31.9°	1.89
32° to 32.9°	1.97
33° to 33.9°	2.05
84° to 34.9°	2.13
35° to 35.9°	2.21
36° to 36.9°	2.29
37° and above	2.37
Big Muddy	2.25
Mule Creek	1.75
Grass Creek, light	2.40
Grass Creek, heavy	.90
Elk Basin	2.40
Lance Creek	2.40
Rex Lake	1.45
Osage	2.40
Lost Soldier (contract)	1 35
Greybull-Torchlight	2.15
Hamilton Dome	1.35
Cat Creek (Mont.)	2.40
Sunburst (Mont.) (May 6)	1.05
Florence (Colo.)	1.60
Artesia	1.95
Hogback (N. Mex.)	2.45

Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective March 8)

Penna Grade Oil in New York Transit Lines (New York)	$3.40
Bradford District Oil in National Transit Lines (Pennsylvania)	3.40
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.30
Penna Grade Oil in Southwest Pa. Lines (West Virginia)	3.30
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	3.25
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	3.05
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 17)	2.40
Corning Grade Oil in Buckeye Pipe Line Lines (Ohio) (May 22)	2.55
Somerset Medium Oil in Cumberland Pipe Line Lines (Kentucky) (May 17)	2.50
Somerset Light Oil in Cumberland Pipe Lines (Kentucky) (May 17)	2.65
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (May 19)	1.25
Gaines (Pennsylvania) (Apr. 27)	2.85
Keister (Pennsylvania) (Feb. 15)	2.30

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective May 17)

Lima	$2.48
Wooster	2.55
Illinois	2.37
Indiana	2.25
Princeton	2.37
Plymouth	1.90
Waterloo	1.35
*Western Kentucky, 32.9° and below (May 18)	2.10
33° to 35.9° (May 18)	2.20
36° to 38.9° (May 18)	2.30
39° and above (May 18)	2.40
†Cumberland, Barren and Monroe Counties, Ky., (May 17)	2.65
**Oil in lines of Stoll Oil Refg. Co. in Oil City, Ky.	2.65
**Oil in lines of Stoll Refg. Co. in Tinsley Bottom, Tenn.	2.46
§Oil Springs (Canada) (May 18)	2.95
§Petrolia (Canada) (May 18)	2.88

**Posted by Stoll Oil Refg. Co.
*Posted by Indian Refining Co.
†Posted by Paragon Development Co.
§Posted by Imperial Oil Co., Ltd.

MEXICO
(Effective May 13)

*Tuxpam light (f.b.o. Mex. ports)	$1.35
§Panuco heavy (f.o.b. Mex. ports)	1.15
Tuxpam (New York)	2.15
Panuco (New York)	1.80

*Plus 32.328c tax. §17.631c tax.

OKLAHOMA MARKET CONTINUES STRONG

(Continued from Page 28)

time last year. However, this reduction is not comparatively large especially considering the greatly increased consumption this year.

The figures show an increase in gas and fuel oil produced and also in stocks of these products but this was before the heavy demand for gas oil and fuel oil which came in August. The market on these products was weak during July, a reflection of these increased stocks, but since then there has been a big drain on the supply of these products.

The Government report also shows a decrease in production of kerosene during July amounting to 2,455,000 gallons and in stocks amounting to 3,916,000 gallons. The 29,132,000 gallons of kerosene in storage on July 31, was more than 15,000,000 gallons less than on the same day of last year which accounts for the much stronger market this year than last.

As for the Oklahoma situation now, many refiners report they haven't a thing to sell either for immediate shipment or for movement over the next few weeks, while others have only limited amounts and that mostly of gasoline. This would seem to indicate a particularly healthy condition. On the other hand, there are a few sources who have gasoline and who continue to make sufficient concessions under the generally quoted market to prevent a rapid advance.

No Great Change

With this in view it is general opinion that there will be no great change in markets either up or down during the month with practically every product maintaining a firm and steady position.

The trend of 60-62 400 gasoline from now on is to be watched more than ever before, according to market students. This material has shown a steady increase in demand and domestic inquiries the past two weeks have been as great as for the 58-60 437 material. The 400 gasoline was available a week ago as low as 11⅜ cents but the dwindling supplies due to the increased orders early last week have forced refiners to advance their quotations until on Tuesday the product was not easily available at 11½ cents and most of the business was from 11⅝ to 11¾ cents.

Several large marketing companies, particularly The Texas Company, have been buying 400 endpoint gasoline in substantial amounts but inquiries from jobbers in all parts of the Mid-Continent marketing territory now are making up the bulk of the demand showing a trend from the U. S. Motor fuel to the lighter product.

Other gasoline prices also moved upward, although not due to an increase in inquiries. The U. S. Motor material Tuesday was not offered under 11 cents and, on the other hand refiners were asking up to 11½ cents. The 64-66 375 gasoline continued slow although quoted at slightly advanced prices.

Natural Gasolines

Natural gasolines continued steady. Sellers Tuesday were getting prices a shade higher than a week ago. The demand for these products has not been quite so active the last few trading days but there has been little material available. Grade C, however, still was available at 9¾ cents but the prevailing quotation on the A grades was 10¼ cents. Some Grade A was sold Saturday at 10⅝ cents and some under 10¼ cents but these sales were not many.

Kerosene and Distillates

There was practically no change in either kerosene or distillates. These products continued very tight and prices strong. Some reports of 41-43 water white kerosene below 9½ cents were heard but buyers found difficulty in getting these bargains. The demand has not been quite so active but market students believe there will be a revival of activity before long. It is generally only waiting a more opportune period to fill their requirements.

Distillates still were quoted from 5½ cents up depending on specifications. The prices asked for this product are being determined largely on the different specifications required, including color, flash and cold tests. However, there still is very little distillate of any specification available.

Gas Oil and Fuel Oil

Fuel oils enjoyed further price advances during the week. The increases were not general, the strengthening being felt mostly in the lighter grades. Buyers were forced to pay from $1.60 to $1.65 for 26-30 fuel during the week while the 28-30 was quoted from $1.70 up. There was not much change in other grades although some sellers were able to boost the top quotations a shade.

Gas oil was not quite as strong as fuel oils but this product continued tight with little of any grade available under 4¼ cents.

Lubricants and Wax

Lubricating oils generally were steady in movement and prices firm. The viscosity grades are particularly in demand in the neutrals. Bright stocks also continued very strong although some shading was apparent in cylinder stocks. There were no developments which might indicate a change in wax although this product is approaching its season. The product has been unusually weak for months, although manufacturers have been making no effort to move it.

EXPECTED TO FACILITATE CRUDE OIL MOVEMENT

(Continued from Page 39)

The line has been laid from Bruni past Benavides and is proceeding toward San Diego in Duval County. From Ingleside, a line will run down to Harbor City, at which point the Humble company will put in its tank farm consisting of four 80,000-bbl. storage tanks. The Humble is dredging a turning basin at its Harbor City holdings from which to ship oil. This turning basin will connect with the deep-water channel of the new Port of Corpus Christi, and will form a very valuable addition to Corpus Christi's new deep-water project.

Over 12,000 feet of breakwater have been constructed at Corpus Christi, to protect not only the turning basin, but the entire waterfront of the city. A huge bascule bridge has been built with a 110-foot span and a 90-foot clearance between the fenders.

The turning basin is 1,000 feet wide and 2,700 feet long, with an initial depth of 30 feet. Docks and warehouses for the accommodations of four vessels have been built along the south side of the turning basin. Bids for an additional 1,200 feet of wharf have been opened.

The oil development going on in south Texas in territory adjacent to the Port of Corpus Christi is another guarantee of its success.

Bascule bridge across the channel, Port of Corpus Christi.

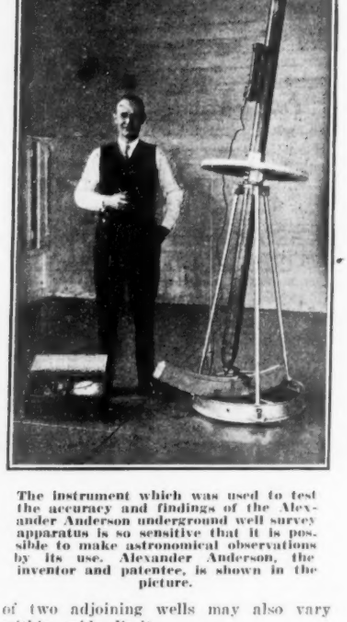
UNDERGROUND SURVEY OF WORLD'S DEEPEST WELL

(Continued from Page 29)

floor, the size of the untapped area under the derrick is exactly 30 acres.

There is a good deal of literature dealing with the spacing of derricks according to theoretical considerations. Such suggestions show that the great underground drift of wells was not formerly appreciated. The underground course of wells cannot be predicted.

Underground surveying of California rotary holes has demonstrated that wells in the same field do not follow parallel lines underground. The amount of drift



The instrument which was used to test the accuracy and findings of the Alexander Anderson underground well survey apparatus is so sensitive that it is possible to make astronomical observations by its use. Alexander Anderson, the inventor and patentee, is shown in the picture.

of two adjoining wells may also vary within wide limits.

Areas of oil sand underlying drilled leases may remain untapped. The fact that No. 96 Olinda is 517 feet out of plumb at 6,000 feet is in no way exceptional. The drift of shallower wells has been found to exceed 517 feet. The proposition that wells drift in different directions and by different amounts suggests the idea that areas of untapped oil sand may exist under fully drilled-up leases. A lease-wide survey of every well will disclose the actual conditions.

Oil men can quote many instances of a drilling well ruining a valuable producer. Instances of a new well reducing the production of another are also pretty common. Such occurrences were formerly often attributed to channels or openness in the oil sand, but the facts disclosed by the surveying of wells show how easy it is for two wells, whose derricks are far apart on the surface, to be completed very close together underground.

In the underground survey of No. 96 Olinda, the Chanslor-Canfield Midway Oil Co. held a valuable means of protecting any production that may be developed in this well. When a well has been surveyed, its exact position at all depths is known. It is then easy to make progressive surveys of other drilling wells around it and see whether any of them are approaching too near. If a drilling well is found to be drifting toward the producer, its course can be changed.

Hudson and Taliaferro show that a sidetracking job at 3,957 feet changed the direction of drift of a rotary hole by 64 degrees. Similar changes to any desired direction can undoubtedly be accomplished by placing a wedge in the hole with its face turned toward the required bearing. Deflecting holes with wedges is standard practice in diamond drilling and there is no doubt that, by surveying and wedging, oil wells can be protected from damage.

Each derrick stands in the center of an allotted area. To wedge wells apart so that they may attain approximately equal spacing in the oil zone is evidently an additional valuable objective.

Glass Models Used

Where the ore bodies in a mine are irregular, it is standard mining practice to plot the plan of each level on a separate sheet of glass and maintain an up-to-date glass model of the mine.

The glass model of the Chanslor-Canfield Midway Oil Co.'s No. 96 Olinda well is thought to be the first scale model of an oil well ever constructed. Some facts regarding the true shape of the course taken by the lower part of the well, obtained from a study of the model, would certainly have remained unknown without its aid. It seems quite probable that interesting and valuable results may be obtained from glass models outlining the course of all of the wells on a lease. Where the survey data of the wells are available, it is not difficult to construct a glass model.

Underground Contour Maps

The data from which all underground contour maps of drilled areas have hitherto been constructed were taken from well logs, assuming the wells to be accurately vertical. The sharp and frequent changes in direction exhibited by some of the plotted contours—occasionally amounting to almost a saw-tooth pattern—do not seem to truthfully represent the probable contours of the sedimentary rocks.

It is thought that an example of an underground survey, such as the Chanslor-Canfield Midway Oil Co.'s No. 96 Olinda, provides good reasons for believing that, had the well log data been corrected from underground surveys of the wells, underground contour forms would be smoother and the location of contours would frequently be considerably altered.

In gathering the primary facts regarding the structure in a new oil field, the peg model is almost a necessity. The best that can be done in this case is to correct the peg model horizons to the true surveyed positions, as far as this is practicable. As soon as the logs of the two or three adjacent surveyed wells become available, rapid progress in such corrections becomes possible.

MAY REVOLUTIONIZE DRILLING

By L. P. Stockman

Alexander Anderson, patentee and operator of the Anderson Underground Oil Well Survey Apparatus, was born in Dale, Spencer County, Indiana, and educated in the elementary public schools of Kentucky. He finished his education in Europe, where he attended the University of Edinburgh and the University of Aberdeen, Scotland. He then served an apprenticeship as a mining engineer and later graduated from the Royal School of Mines, London, afterwards traveling extensively as a mining engineer in 27 countries. In 1906 Mr. Anderson was chief survey engineer of the Esperanza mine, El Oro, in Mexico, the then largest gold mine in existence.

In connection with Mr. Anderson's survey apparatus, he and his brother, Robert, who received his degree from the Michigan School of Mines, invented the Anderson detachable bit. Mr. Anderson, at the insistence of the Board of Regents of the Fullerton Junior College, inaugurated an advanced drilling, surveying and geological course last year, and this class, one of the first along these lines, and limited to officials, general managers, superintendents, surveyors and geologists of the operating companies in the Whittier-Fullerton area.

Mr. Anderson has been working on underground survey work for a number of years and, although the present advanced apparatus has been used in California fields, it is practically unknown to operators outside. It is possible a general utilization of this apparatus may revolutionize drilling, not only of wildcats but of wells in proven territory. It has been found invaluable in several instances in California, particularly in overdrilled town lot areas. Some time ago drilling wells came together in the Long Beach Field. Both were drilling down to the pay when the bit in one well encountered the drill stem in the other. In another case a producing well was ruined when the bit of an offset deviated from the vertical and drilled into the producing hole. The rotary mud from the driller killed the flow of the producing well and so effectively mudded up the oil sand that subsequent production was but a small amount of that secured previous to the intrusion of the bit of the drilling well.

C.-C. M. O. CO. OLINDA NO. 96
SURVEY DATA OF UNDERGROUND COURSE OF ROTARY HOLE

A	B	C	D	E	F	G	H
Reading No.	Measured Depth. Feet	Actual Vertical Depth. Feet	Direction of Inclination.	Inclination of Hole From Vertical in Degrees	Deviation in Feet Per 100	Lengths of Stands Pipe Feet	Deviation in Feet Per Stand
1	101.00	101.00	S. 45° 55′ E.	0° 30′	0.87	101.00	0.88
2	191.67	191.66	S. 40° 12′ E.	1° 00′	1.75	90.67	1.58
3	281.84	281.80	S. 43° 17′ E.	1° 25′	2.47	90.17	2.23
4	371.01	370.94	S. 40° 54′ E.	1° 30′	2.62	89.17	2.33
5	461.18	461.05	S. 36° 46′ E.	2° 00′	3.49	90.17	3.15
6	549.51	549.32	S. 31° 16′ E.	2° 10′	3.78	88.33	3.34
7	640.34	639.90	S. 25° 02′ E.	4° 15′	7.41	90.83	6.73
8	732.17	731.25	S. 40° 58′ E.	5° 50′	10.16	91.83	9.33
9	823.75	822.15	S. 51° 36′ E.	7° 00′	12.19	91.58	11.16
10	914.92	912.84	S. 63° 09′ E.	5° 58′	10.25	91.17	9.34
11	1007.00	1004.78	S. 54° 54′ E.	3° 10′	5.52	92.08	5.09
12	1096.08	1093.61	S. 59° 21′ E.	4° 20′	7.56	89.08	6.72
13	1185.91	1182.99	S. 60° 07′ E.	4° 10′	7.27	89.83	6.53
14	1275.49	1272.67	S. 49° 19′ E.	2° 30′	4.36	89.58	3.91
15	1364.41	1361.50	S. 54° 28′ E.	2° 50′	4.94	88.92	4.40
16	1452.41	1449.33	S. 53° 12′ E.	3° 30′	6.11	88.00	5.37
17	1541.99	1538.67	S. 55° 55′ E.	4° 15′	7.41	89.58	6.64
18	1631.74	1628.06	S. 68° 47′ E.	5° 10′	9.01	89.75	8.08
19	1720.57	1716.35	S. 78° 30′ E.	6° 20′	11.03	88.83	9.80
20	1807.49	1804.44	S. 79° 48′ E.	7° 50′	13.63	88.92	12.12
21	1899.66	1894.02	S. 89° 33′ E.	6° 35′	11.47	90.17	10.34
22	1989.49	1983.51	S. 79° 47′ E.	5° 00′	8.72	89.83	7.83
23	2078.74	2072.24	N. 75° 07′ E.	6° 10′	10.74	89.25	9.59
24	2168.07	2160.79	N. 68° 48′ E.	7° 35′	13.20	89.33	11.79
25	2256.82	2248.92	N. 69° 03′ E.	6° 45′	11.75	88.75	10.43
26	2345.99	2337.52	N. 70° 55′ E.	6° 30′	11.32	89.17	10.09
27	2434.66	2425.78	S. 89° 30′ E.	5° 20′	9.59	88.67	8.50
28	2523.33	2514.02	S. 80° 52′ E.	5° 40′	9.87	88.67	8.76
29	2607.41	2597.44	S. 71° 54′ E.	7° 10′	12.48	84.08	10.49
30	2693.24	2682.50	S. 58° 13′ E.	7° 40′	13.34	85.83	11.45
31	2779.57	2768.25	S. 39° 14′ E.	6° 40′	11.61	85.33	10.02
32	2865.82	2853.79	S. 47° 42′ E.	7° 20′	12.76	86.25	11.01
33	2954.74	2941.67	S. 50° 29′ E.	8° 45′	15.21	88.92	13.53
34	3042.91	3028.54	S. 44° 32′ E.	9° 50′	17.08	88.17	15.06
35	3133.49	3118.24	S. 32° 10′ E.	8° 00′	13.92	90.58	12.61
36	3222.49	3206.14	S. 28° 58′ E.	9° 00′	15.64	89.00	13.92
37	3311.16	3293.72	S. 43° 20′ E.	9° 00′	15.64	88.67	13.87
38	3397.99	3379.44	S. 39° 58′ E.	9° 10′	15.93	86.83	13.83
39	3486.99	3467.50	S. 60° 02′ E.	8° 20′	14.49	89.00	12.90
40	3575.32	3555.29	S. 58° 26′ E.	6° 20′	11.03	88.33	9.74
41	3663.74	3643.17	S. 65° 05′ E.	6° 20′	11.03	88.42	9.75
42	3751.91	3730.68	S. 63° 01′ E.	7° 00′	12.19	88.17	10.75
43	3839.83	3817.94	S. 84° 47′ E.	7° 00′	12.19	87.92	10.71
44	3928.00	3905.25	N. 69° 06′ E.	8° 00′	13.92	88.17	12.27
45	4017.17	3993.04	N. 42° 10′ E.	10° 05′	17.51	89.17	15.61
46	4106.84	4081.23	N. 31° 53′ E.	10° 25′	18.08	89.67	16.21
47	4193.26	4165.37	N. 36° 49′ E.	13° 12′	22.84	86.42	19.73
48	4280.84	4250.16	N. 35° 38′ E.	14° 30′	25.04	87.58	21.93
49	4371.34	4337.51	N. 43° 52′ E.	12° 15′	26.16	90.40	23.68
50	4459.26	4423.43	N. 43° 14′ E.	12° 15′	21.22	87.92	18.65
51	4544.88	4506.88	N. 51° 08′ E.	12° 20′	21.36	85.42	18.25
52	4632.26	4592.95	N. 46° 28′ E.	10° 40′	18.51	87.58	16.21
53	4721.26	4679.95	N. 41° 02′ E.	12° 10′	21.08	89.00	18.76
54	4809.26	4765.64	N. 33° 01′ E.	13° 10′	22.78	88.00	20.04
55	4898.43	4852.19	N. 26° 00′ E.	13° 55′	24.05	89.17	21.45
56	4985.35	4937.31	N. 19° 51′ E.	11° 40′	20.22	86.92	17.58
57	5073.43	5024.10	N. 20° 18′ E.	9° 50′	17.08	88.08	15.04
58	5163.35	5112.95	N. 27° 06′ E.	8° 50′	15.36	89.92	13.81
59	5251.85	5200.34	N. 34° 57′ E.	9° 05′	15.79	88.20	13.97
60	5339 27	5286.48	N. 38° 15′ E.	9° 50′	17.08	87.42	14.93
61	5428.85	5374.49	N. 24° 04′ E.	10° 45′	18.65	89.58	16.71
62	5517.77	5461.73	N. 32° 45′ E.	11° 10′	19.37	88.92	17.22
63	5607 19	5549.52	N. 26° 02′ E.	10° 58′	19.02	89.42	17.01
64	5696 19	5636.84	N. 29° 18′ E.	11° 10′	19.37	89.00	17.24
65	5785.69	5724.16	N. 5° 27′ E.	12° 40′	21.93	89.50	19.63
66	5873.19	5809.42	N. 20° 07′ E.	13° 00′	22.50	87.50	19.68
67	5962.27	5896.01	N. 41° 31′ E.	13° 35′	23.49	89.08	20.92
68	6052 60	5985.82	N. 1° 13′ W.	6° 10′	10.74	90.33	9.70
69	6142.18	6073.22	N. 46° 00′ W.	12° 40′	21.93	89.58	19.64
70	6227.35	6153.34	S. 81° 24′ W.	19° 50′	33.93	85.17	28.90
71	6317.68	6238.13	S. 89° 10′ W.	20° 10′	34.48	90.33	31.14
72	6406.18	6321.47	N. 82° 25′ W.	19° 40′	33.66	88.50	29.78
73	6496.85	6407.45	N. 81° 10′ W.	18° 30′	31.73	90.67	28.77
74	6521.85	6431.36	N. 79° 00′ W.	17° 00′	29.24	25.00	7.31
74a	6596.59	6501.14	N. 77° 04′ W.	21° 00′	35.84	74.74	26.78
75	6683 92	6580.82	N. 75° 35′ W.	24° 10′	40.94	87.33	35.75
76	6772.25	6659.52	N. 68° 38′ W.	27° 00′	45.40	88.33	40.10
77	6860.83	6737.24	N. 71° 29′ W.	28° 40′	47.97	88.58	42.49
78	6948 66	6815.50	N 76° 04′ W.	27° 00′	45.40	87.83	39.87

ALEXANDER ANDERSON, 243 East Whiting Ave. Fullerton, Calif.

STATE GASOLINE TAXATION

CHICAGO, Sept. 4.—The matter of securing uniform taxes on gasoline will be taken up by a meeting of state executives of petroleum clubs and other organizations at a meeting to be held at St. Louis in November. The taxes not only vary in amount but in manner of levying and collection and great confusion is caused. The Supreme Court of Indiana will have the question brought before it whether collectors of gasoline taxes have the right to collect gasoline tax and inspection fees from Indiana motorists who have purchased a fill of gasoline in another state. Residents of other states are allowed to bring into Indiana 20 gallons of gasoline free of tax and it is claimed the attemtpt of the Indiana officials to collect a tax on gasoline brought into the state by residents of Indiana is discrimination and an interference with interstate commerce.

FUEL OIL STORAGE

OKLAHOMA CITY, Okla., Sept. 4. The city of Lubbock, Texas., plans erection of a storage reservoir to hold 100,000 gallons of fuel oil. Th's is to be used in operating the city's utilities plants.

PANHANDLE OIL ASSOCIATION

AMARILLO, Tex., Sept. 4.—Oil producers of the Amarillo district have organized the Panhandle Oil and Gas Association. R. G. Barnum was elected president, J. O. Whittington, vice president and O. C. Goodwin, secretary.

Endurance Facts

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First Refiner Anticipated Future

Professor Silliman, Before Drake Drilled First Well, Wrote Article Outlining Methods Since Developed

By B. Silliman, Jr.*
Professor of General and Applied Chemistry, Yale College

(Editorial note. We have obtained of Professor Silliman, permission to reproduce in this number of the American Chemist, his original memoir on the Pennsylvania petroleum written in April, 1855, as a report to the projectors of the first association ever formed, for the purpose of developing this industry, since grown to such great proportions. This report has never before been published in any scientific journal, although a few copies were privately printed at the time, and we deem it of too much historical and scientific interest, not to be placed in our pages for the convenience of reference. At the time Professor Silliman made this research, all that was known of the "rock oil" of Pennsylvania was, that on the waters of Oil Creek, in Venango County, the oil oozed out in pits dug in the soil and floated on the surface of the water as a dark green dichroous oil of high density (0.882 degrees Baume). No artesian well then existed, or had been even thought of as a possibility. Drake's well was sunk more than two years after the report of Professor Silliman was written. In reading this report now, after 16 years of experience in the development of this important industry, we are struck with the fact that its author very nearly exhausted the subject, and anticipated and described most of the methods of treatment, which have since been adopted by manufacturers. He even suggests the distillation by high steam, which has been adopted with so much success by Merrill, in the preparation of his neutral heavy oil. He also noticed the peculiar breaking up of the heavier oils into lighter products, under the continued action of heats far below their boiling points, now called "cracking." He remarks that when "exposed for many days in an open vessel at a regulated heat below 112 degrees, the oil gradually rises in vapor." etc, gradually and slowly disappearing, and finally leaving a small pitchy dry residue.

Professor Silliman was the first to demonstrate by accurate photometric experiments, the high value of the rectified oil as an illuminator, devising for that purpose an original form of photometer[1], in advance of Bunsen's instrument, employing for its consumption a lamp which is the prototype of the extensive progeny of kerosene lamps which have since that time been devised.

We reproduce the report of Professor Silliman precisely as it was written, and it must, in justice to its author be remembered that he then had no guide but his own sagacity in the conduct of this interesting research).

SILLIMAN REPORT ON PENNSYLVANIA CRUDE

This report was made on a quantity of oil which had been "gathered" on certain lands in Pennsylvania approximately four years before the Drake well was drilled. There can be no question that it directed attention to the possibilities for the development of our great industry and it will always remain as the first step in petroleum research. There have been so many requests for the publication of the complete report that we are glad to reproduce it. We also endorse the original note made by the editor of the American Chemist in 1871 as being equally applicable today.—Technical Editor.

Report

Messrs. Eveleth, Bissell & Reed,
Gentlemen:—

I herewith offer you the results of my somewhat extended researches upon the rock oil, or petroleum, from Venango County, Pennsylvania, which you have requested me to examine with reference to its value for economical purposes.

Numerous localities, well known in different parts of the world, furnish an oily fluid exuding from the surface of the earth, sometimes along in "tar springs," as they are called in the western United States; frequently it is found floating upon the surface of water in a thin film with rainbow colors, or in dark globules, that may, by mechanical means, be separated from the fluid on which it swims.

In some places wells are sunk for the purpose of accumulating the product in a situation convenient for collection by pumping water out. The oil exudes on the shores of lakes and lagoons, or rises from springs beneath the beds of rivers. Such are the springs of Baku, in Persia, and the wells of Amiano, in the duchy of Parma, in Italy. The usual geological position of the rocks furnishing this natural product is in the coal measures—but in whatever deposits it may occur, it is uniformly regarded as a product of vegetable decomposition. Whether this decomposition has been effected by fermentation only, or by the aid of an elevated temperature, and distilled by heated vapor, is perhaps hardly settled.

It is interesting, however, in this connection to remember, that the distillation, at an elevated temperature, of certain black bituminous shales in England and France, has furnished large quantities of an oil having many points of resemblance with naphtha, the name given to this colorless oil, which is the usual product of distilling petroleum. The very high boiling point of most of the products of the distillation of the rock oil from Venango County, Pennsylvania, would seem to indicate that it was a pyrogenic (fire produced) product.

Bitumen, asphaltum, mineral pitch, chapapote, etc., are names variously given to the more or less hard, black resinous substance which is produced usually from the exposure of petroleum to the air, and is found either with or without the fluid naphtha or petroleum. The most remarkable examples of the occurrence of these substances, so intimately connected with history of rock oil, are the lake asphaltites of the Dead Sea, so memorable in history, the well known Bitumen Lake of Trinidad, and the deposits of mineral pitch or chapapote in Cuba. In one of the provinces of India, vast quantities of petroleum are annually produced, the chief consumption being local, for fuel and lights, but a portion is also exported to Europe for the production of naphtha. In the United States, many points on the Ohio and its tributaries, are noted as producing this oil; nearly all of them within the coal measures. A detailed history of these various localities can be found recorded in books of science, and their repetition here would be out of place.

General Character of the Crude Product

The crude oil, as is gathered on your lands, has a dark brown color, which by reflected light, is greenish or bluish. It is thin even in warm weather—about as thick as molasses. In very cold weather it is somewhat more stiff, but can always be poured from a bottle even at 15 degrees below zero. Its odor is strong and peculiar, and recalls to those who are familiar with it, the smell of bitumen and naphtha. Exposed for a long time to the air, it does not thicken or form a skin on its surface, and in no sense, can it be called a drying oil. The density of the crude oil is 0.882, water being 1.000. It boils only at a very high temperature, and yet it begins to give off a vapor at a temperature not greatly above that of boiling water. It takes fire with some difficulty, and burns with an abundant smoky flame. It stains paper with the appearance of ordinary fat oils, and feels smooth and greasy between the fingers. It is frequently used in its crude state to lubricate coarse machinery. In chemical characters, it is entirely unlike the fat oils. Most of these characters are common to petroleum from various places. In one important respect, however, the product of your lands differs from that obtained in other situations, that is, it does not, by continued exposure to the air, become hard and resinous like mineral pitch or bitumen. I have been informed by those who have visited the locality, that on the surface of the earth above the springs which furnish your oil, there is no crust of deposit of this sort such as I have seen in other situations where petroleum or mineral tar is flowing. This difference will be seen to be of considerable importance, as it is understood and represented that this product exists in great abundance upon your property, that it can be gathered wherever a well is sunk in the soil, over a great number of acres, and that it is unfailing in its yield from year to year. The question naturally arises, of what value is it in the arts, and for what can it be employed? To enable you to answer these inquiries has been the object of my researches.

Examination of the Oil

To determine what products might be obtained in the oil, a portion of it was submitted to fractional distillation.* The temperature of the fluid was constantly regulated by a thermometer, the heat being applied first by a water bath, and then by a bath of linseed oil. This experiment was founded upon the belief that the crude product contained several distinct oils, having different boiling points. The quantity of material used in this experiment, was 304 grammes. The thermometer indicated the degrees of Centigrade scale, but, for convenience, the corresponding degrees of Fahrenheit's scale are added. The water bath failed to distill any portion of the oil at 100 degrees Centigrade (= 212 degrees Fahrenheit) only a small quantity of acid water came over. An oil bath, (linseed oil), was then substituted, and the temperature was regularly raised by slow degrees until distillation commenced. From that point the heat was successively raised by stages of 10 degrees, allowing full time at each stage for complete distillation of all that would rise at that temperature before advancing to the next stage. The results of this tedious process are given in the annexed table—304 grammes of crude oil, submitted to fractional distillation, gave:

Temperature	Grammes
First produced at 100° C. = 212° F. (acid water)	5
Second produced at 140° C. to 150° C. = 284° to 302° F.	26
Third produced at 150° C. to 160° C. = 302° to 320° F.	29
Fourth produced at 160° C. to 170° C. = 302° to 338° F.	38
Fifth produced at 170° C. to 180° C. = 338° to 356° F.	17
Sixth produced at 180° C. to 200° C. = 356° to 392° F.	16
Seventh produced at 200° C. to 220° C. = 392° to 428° F.	17
Eighth produced at 220° C. to 270° C. = 428° to 518° F.	12
Whole quantity distilled by this method	160
Leaving residue in the retort	144
Original quantity	304

Product No. 1, as above remarked, was almost entirely water, with a few drops of colorless oil, having an odor similar to the original fluid, but less intense.

Product No. 2 was an oil perfectly colorless, very thin and limpid, and having an exceedingly persistent odor, similar to the crude oil, but less intense.

Product No. 3 was tinged slightly yellow, perfectly transparent and apparently as limpid as the second product, with the same odor.

Product No. 4 was more decidedly yellowish than the last, but was in no other respect distinguishable from it.

Product No. 5 was more highly colored, thicker in consistence, and had a decided empyreumatic odor.

Product No. 6. This and the two subsequent products were each more highly colored and denser than the preceding. The last product had the color and consistency of honey, and the odor was less penetrating than that of the preceding oils. The mass of crude product remaining in the retort, (equal 47.4 per cent), was a dark, thick resinous looking varnish, which was so stiff when cold, that it could be inverted without spilling. This showed no disposition to harden or skin over by exposure to the air. The distillation was arrested at this point in glass, by our having reached the limit of temperature for a bath of linseed oil. The density of the several products of this distillation, shows a progressive increase, thus:

No. 2 density	.733
No. 3 density	.752
No. 4 density	.766
No. 5 density	.776
No. 6 density	.809
No. 7 density	.848
No. 8 density	.854

To form an idea of the comparative density of these several products, it may be well to state, that sulphuric ether, which is one of the lightest fluids known, has a density of 0.736, and alcohol, when pure 0.800.

The boiling points of these several fluids present some anomalies, but are usually progressive, thus, No. 2 gave signs of boiling at 115 degrees Centigrade (= 239 degrees Fahrenheit) and boiled vigorously, and remained constant at 225 to 228 degrees Centigrade (= 437 to 442 degrees Fahrenheit). No. 3 began to boil 120 degrees Centigrade (= 248 degrees Fahrenheit) rose to 270 degrees Centigrade (= 518 degrees Fahrenheit) where it remained constant. No. 4 began to vaporize at 140 degrees Centigrade (= 284 degrees Fahrenheit) rose to 290 degrees Centigrade (= 554 degrees Fahrenheit) where it remained constant. On

*From the American Chemist, Volume 2, Page 18, July 1871.

[1]For the description of this instrument, see Silliman's Journal (2) xxiii, 315.

*Fractional distillation is a process intended to separate various products in mixture, and having unlike boiling points, by keeping the mixture contained in an alembic at regulated successive stages of temperature as long as there is any distillate at a given point, and then raising the heat to another degree, etc.

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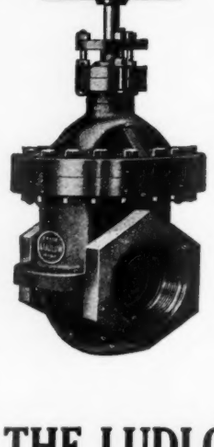

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a second heating the temperature continued to rise and passed 305 degrees Centigrade (= 581 degrees Fahrenheit). No. 5 gave appearance of boiling at 160 degrees Centigrade (= 320 degrees Fahrenheit) boiling more vigorously as the heat was raised, and was still rising at 308 degrees Centigrade (= 581 degrees Fahrenheit). No. 6 commenced boiling at 135 degrees Centigrade (= 275 degrees Fahrenheit) boiled violently at 160 degrees Centigrade (= 320 degrees Fahrenheit) and continued rising above the range of the mercurial thermometer. No. 7 commenced ebullition at the same temperature as No. 6, and rose to 305 degrees Centigrade (= 581 degrees Fahrenheit) where the ebullition was not very active. Much time was consumed in obtaining these results. We infer from them that the rock oil is a mixture of numerous compounds, all having essentially the same chemical constitution, but differs in density and boiling points, and capable of separation from each other, by a well-regulated heat.

The uncertainty of the boiling points indicates that the products obtained at the temperatures named above, were still mixtures of others, and the question forces itself upon us, whether these several oils are to be regarded as educts, (i. e., bodies previously existing, and simply separated in the process of distillation,) or whether they are not rather produced by the heat and chemical change in the process of distillation. The continued application of an elevated temperature alone is sufficient to effect changes in the constitution of many organic products, evolving new bodies not before existing in the original substance.

Properties of the Distilled Oils

Exposed to the severest cold of the past winter, all the oils obtained in this distillation remained fluid. Only the last two or three appeared at all stiffened by a cold of 15 degrees below zero, while the first three or four products of distillation retained a perfect degree of fluidity. Exposed to air, as I have said, they suffer no change. The chemical examination of these oils showed that they were all composed of carbon and hydrogen, and probably have these elements in the same numerical relation. When first distilled, they all had an acid reaction, due to the presence of a small quantity of free sulphuric acid, derived from the crude oil. This was entirely removed by a weak alkaline water, and even by boiling on pure water. Clean copper remained untarnished in the oil which had been thus prepared, showing its fitness for lubrication, so far as absence of corrosive quality is concerned. The oils contain no oxygen, as is clearly shown by the fact that clean potassium remains bright in them. Strong sulphuric acid decomposes and destroys the oil entirely. Nitric acid changes it to a yellow, oily fluid, similar to the changes produced by nitric acid on other oils. Hydrochloric, chromic and acetic acids, do not affect it. Litharge and other metallic oxyds do not change it, or convert it in any degree to a drying oil. Potassium remains in it unaffected, even at a high temperature. Hydrates of potash, soda and lime, are also without action upon it. Chlorid of calcium and many other salts manifest an equal indifference to it. Distilled with bleaching powders (chlorid of lime) and water, in the manner of producing chloroform, the oil is changed into product having an odor and taste resembling chloroform. Exposed for many days in an open vessel, at a regulated heat below 212 degrees, the oil gradually rises in vapor, as may be seen by its staining the paper used to cover the vessel from dust, and also by its sensible diminution. Six or eight fluid ounces, exposed in this manner in a metallic vessel for six weeks or more, the heat never exceeding 200 degrees, gradually and slowly diminished grew yellow, and finally left a small residue of dark brown lustrous looking resin, or pitchy substance, which in the cold was hard and brittle. The samples of oil employed were very nearly colorless. This is remarkable when we remember that the temperature of the distillation was above 500 degrees Fahrenheit. The oil is nearly insoluble in pure alcohol, not more than 4 or 5 per centum being dissolved by this agent. In ether the oil dissolves completely, and on gentle heating is left unchanged by the evaporization of the ether. India rubber is dissolved by the distilled oil to a pasty mass, forming a thick black fluid which, after a short time deposits the india rubber. It dissolved a little amber, but only sufficient to color the oil red. It also dissolves a small portion of copal in its natural state; but after roasting, the copal dissolves in it as it does in other oils.

Use for Gas Making

The crude oil was tried as a means of illumination. For this purpose a weighed quantity was decomposed by passing it through a wrought iron retort filled with carbon, and ignited to full redness. The products of this decomposition were received in a suitable apparatus. It produced nearly pure curburetted hydrogen gas, the most highly illuminating of all the carbon gases. In fact, the oil may be regarded as chemically identical with illuminating gas in a liquid form. The gas produced, equalled 10 cubic feet to the pound of oil. It burned with an intense flame, smoking in the ordinary gas jet, but furnishing the most perfect flame with the argand burner.

These experiments were not prosecuted further, because it was assumed that other products, now known and in use for gas making, might be employed at less expense for this purpose, than your oil. Nevertheless, this branch of inquiry may be worthy of further attention.

Distillation at a Higher Temperature

The results of the distillation at a regulated temperature in glass, led us to believe, that in a metallic vessel, capable of enduring a high degree of heat, we might obtain a much larger proportion of valuable products. A copper still, holding five or six gallons was therefore provided, and furnished with an opening, through which a thermometer could be introduced into the interior of the vessel. Fourteen imperial quarts (or, by weight, 560 ounces) of the crude product were placed in this [illegible] raised rapidly to about [illegible] grade (= 536 degrees Fahrenheit) somewhat higher than the last temperature reached in the first distillation. At this high temperature the distillation was somewhat rapid, and the product was easily condensed without a worm. The product of the first stage was 130 ounces, (or over 28 per cent) of a very light colored thin oil, having a density of 0.792. This product was also acid, and as before, the acid was easily removed by boiling with fresh water. The temperature was now raised to somewhat above 300 degrees Centigrade (= 572 degrees Fahrenheit) and 123 ounces more distilled, of a more viscid and yellowish oil, having a density of 0.865. This accounts for over 43 per cent of the whole quantity taken. The temperature being raised now above the boiling point of mercury, was continued at that until 170 ounces, or over 31 per cent, of a dark brown oil had been distilled, having a strong empyreumatic odor. Upon standing still for some time, a dark blackish sediment was seen to settle from this portion and on boiling it with water, the unpleasant odor was in a great degree removed, and the fluid became more light colored and perfectly bright. (It was on a sample of this that the photometric experiments were made.) The next portion, distilled at about 700 degrees Fahrenheit, gave but about 17 ounces, and this product was both lighter in color and more fluid than the last. It now became necessary to employ dry hickory wood as a fuel, to obtain flame and sufficient heat to drive over any further portions of the residue remaining in the alembic.

It will be seen that we have already accounted for over 75 per cent of the whole quantity taken. There was a loss on the whole process of about 10 per cent, made up in part, of a coaly residue that remained in the alembic, and partly of the unavoidable loss resulting from the necessity of removing the oil twice from the alembic, during the process of distillation, in order to change the arrangements of the thermometer, and pro-

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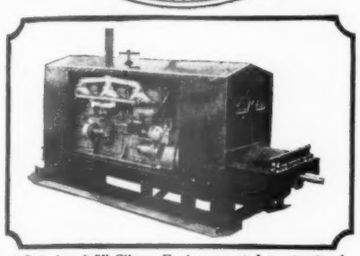

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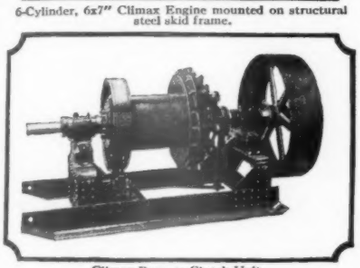

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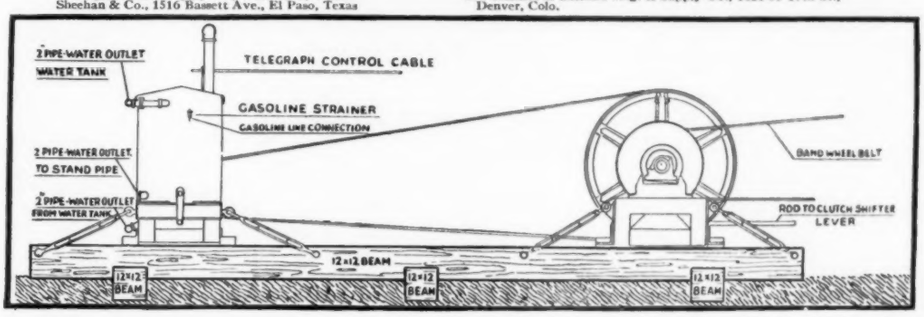

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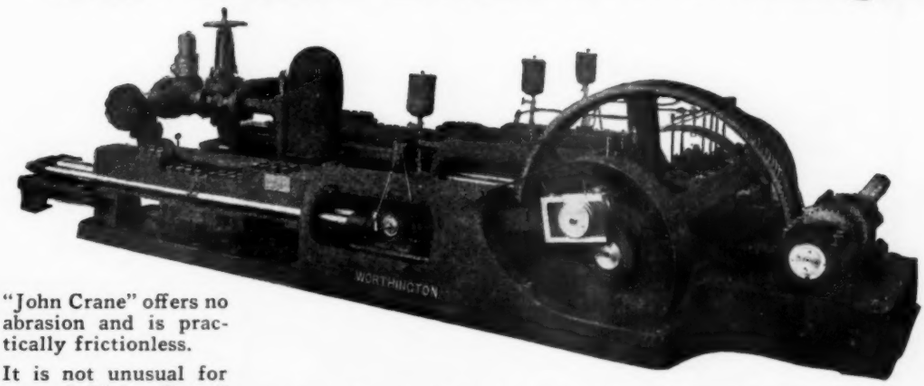

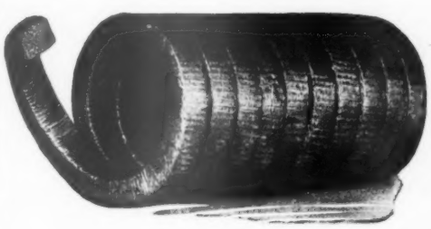

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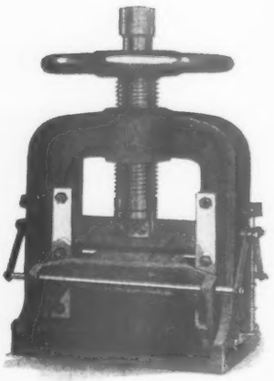

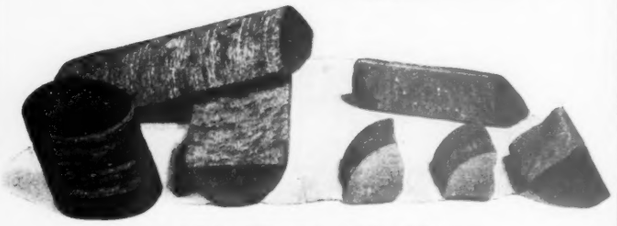

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vide means of measuring a heat higher than that originally contemplated.

About 15 per cent of a very thick, dark oil, completed this experiment. This last product, which came off slowly at about 750 degrees Fahrenheit, is thicker and darker than the original oil, and when cold is filled with a dense mass of pearly crystals. These are paraffin, a peculiar product of the destructive distillation of many bodies in the organic kingdom. This substance may be separated, and obtained as a white body, resembling fine spermaceti, and from it beautiful candles have been made. The oil in which the crystals float is of a very dark color, and by reflected light is blackish green, like the original crude product. Although it distills at so high a temperature, it boils at a point not very different from the denser products of the first distillation. The paraffin, with which this portion of the oil abounds, does not exist ready formed in the original crude product, but it is a result of the high temperature employed in the process of distillation, by which the elements are newly arranged.

I am not prepared to say, without further investigation, that it would be desirable for the company to manufacture this product in a pure state, fit for producing candles, (a somewhat elaborate chemical process), but I may add that, should it be desirable to do so, the quantity of this substance produced may probably be very largely increased, by means which it is now unnecessary to mention. Paraffin derives its name from the unalterable nature of the substance, under the most powerful chemical agents. It is white, in brilliant scales of a greasy luster, it melts at about 116 degrees, and boils at over 700 degrees Fahrenheit.; it dissolves in boiling alcohol and ether, and burns in the air with a brilliant flame. Associated with paraffin are portions of a very volatile oil, eupione, which boils at a lower temperature, and by its presence renders the boiling point of the mixture difficult to determine. I consider this point worthy of further examination than I have been able at present to give it, i. e., whether the last third, and possibly the last half, of the petroleum may not be advantageously, so treated as to produce from it the largest amount of paraffin which it is able to produce.

The result of this graduated distillation, at a high temperature, is that we have obtained over 90 per cent of the whole crude product in a series of oils, having valuable properties, although not all equally fitted for illumination and lubrication.

A second distillation of a portion of the product which came over in the latter stages of the process, (a portion distilled at about 650 degrees Fahrenheit, and having a high color), gave us a thin oil of density about 0.750, of light yellow color and faint odor.

It is safe to add that, by the original distillation, about 50 per cent of the crude oil is obtained in a state fit for use as an illuminator without further preparation than simple clarification by boiling a short time with water.

Distillation by High Steam

Bearing in mind that by aid of high steam, at an elevated temperature, many distillations in the arts are effected which cannot be so well accomplished by dry heat, I thought to apply this method in case of the present research. Instances of this mode of distillation are in the new process for stearine candles, and in the preparation of resin oil. I accordingly arranged my retort in such a manner that I could admit a jet of high steam into the boiler, and almost at the bottom of the contained petroleum. I was, however, unable to command a jet of steam above 275 degrees to 290 degrees Fahrenheit, and, although this produced abundant distillation, it did not effect a separation of the several products, and the fluid distilled had much the same appearance as the petroleum itself, thick and turbid. As this trial was made late in the investigation, I have been unable to give it a satisfactory issue, chiefly for want of steam of a proper temperature. But I suggest, for the consideration of the company, the propriety of availing themselves of the experience already existing on this subject, and particularly among those who are concerned in the distillation of resin oil—a product having many analogies with petroleum in respect to its manufacture.

Use of Naphtha for Illumination

Many fruitless experiments have been made in the course of this investigation which it is needless to recount. I will therefore, only state those results which are of value.

1. I have found that the only lamp in which this oil can be successfully burned is the camphene lamp, or one having a button to form the flame, and an external cone to direct the current of air, as is now usual in all lamps designed to burn either camphene, resin oil, sylvic oil or any other similar product.

2. As the distilled products of petroleum are nearly or quite insoluble in alcohol, burning fluid (i. e., a solution of the oil in alcohol) cannot be manufactured from it.

3. As a consequence, the oil cannot be burned in a hand lamp, since, with an unprotected wick, it smokes badly. Neither can it be burned in a Carcel's mechanical lamp, because a portion of the oil being more volatile than the rest, rises in vapor on the elevated wick required in that lamp, and so causes it to smoke.

I have found all the products of distillation from the copper still capable of burning well in the camphene lamp, except the last third or fourth part (i. e. that portion which came off at 700 degrees Fahrenheit and rising, and which was thick with the crystals of paraffin). Freed from acidity by boiling on water the oils of this distillation burend for 12 hours without injuriously coating the wick, and without smoke. The wick may be elevated considerably above the level required for camphene, without any danger of smoking, and the oil shows no signs of crusting the wick tubes with a coating of resin, such as happens in the case of camphene, and occasions so much inconvenience. The light from the rectified naphtha is pure and white without odor. The rate of consumption is less that half of that of camphene, or resin oil. The imperial pint, of 20 fluid ounces, was the one employed—a gallon contains 160 such ounces. A camphene lamp, with a wick one inch thick, consumed a rectified naphtha in one hour 1¾ ounces of fluid. A Carcel's mechanical lamp of ⅞-inch wick, consumed of best sperm oil, per hour, two ounces. A "Diamond Light" lamp, with "sylvic oil," and a wick 1½-inch diameter, consumed, per hour, four ounces.

I have submitted the lamp burning petroleum to the inspection of the most experienced lampists who were accessible to me, and their testimony was that the lamp burning this fluid gave as much light as any which they had seen, that the oil spent more economically, and the uniformity of the light was greater than in camphene, burning for 12 hours without a sensible dimunition, and without smoke. I was, however, anxious to test the amount of light given, more accurately than could be done by a comparison of opinions. With your approbation I proceeded therefore to have constructed a photometer, or apparatus for the measurement of light, upon an improved plan. Messrs. Grunow, scientific artists of this city, undertook to construct this apparatus, and have done so to my entire satisfaction. This apparatus I shall describe elsewhere—its results only are interesting here. By its means I have brought the petroleum light into rigid comparison with the most important means of artifical illumination. Let us briefly recapitulate the results of these:

Photometric Experiments

The unit adopted for comparison of intensities of illumination is Judd's patent sixes sperm candle.

The sperm oil used was from Edward Mott Robinson, of New Bedford—the best winter sperm remaining fluid at 32 degrees Fahrenheit. The Colza oil and Car-

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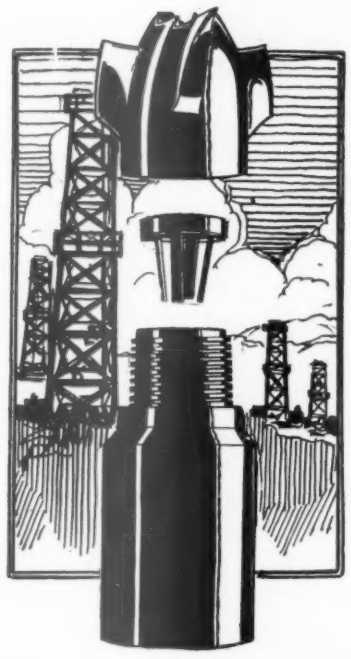

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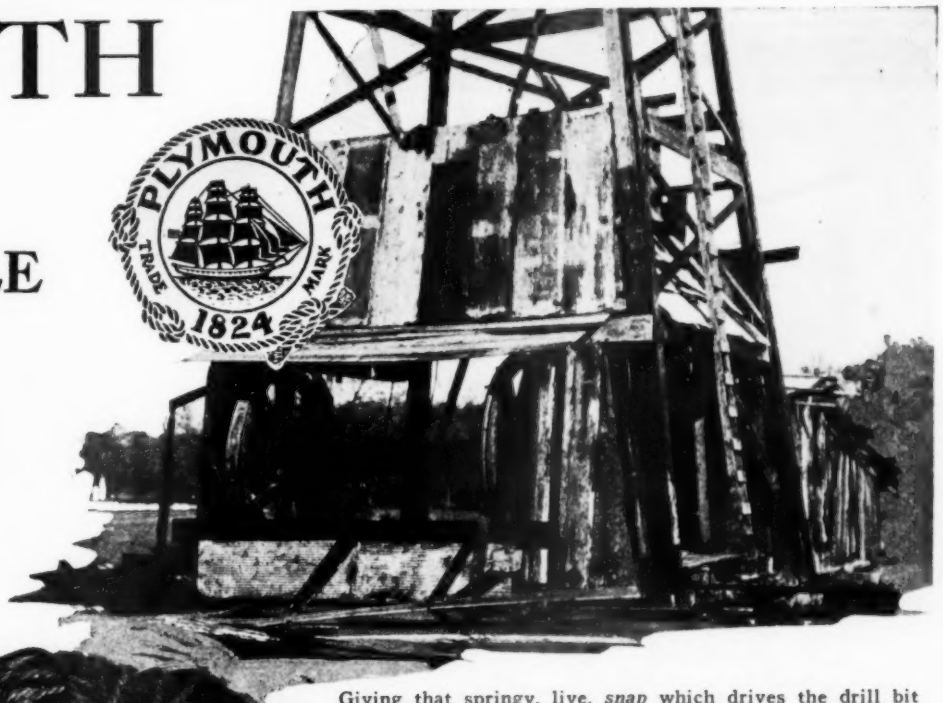

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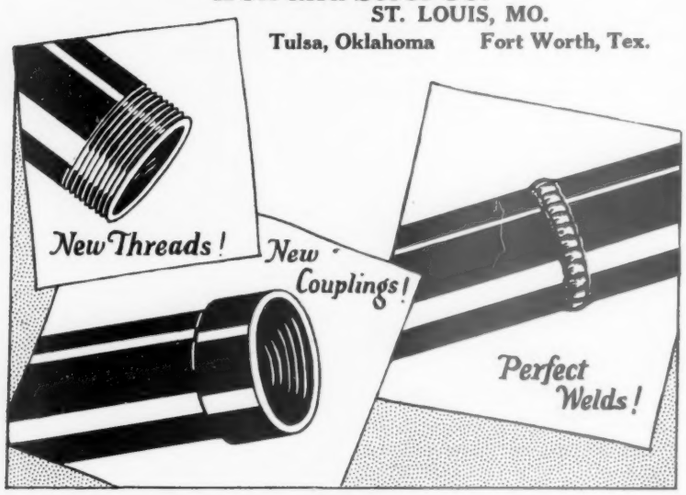

"We were using Standard Balls and Seats in one particular well, No. 2 John Coulter farm, and pulling same about once a week to replace Balls and Seats. Eight months ago we put a set of NO-CO-RO Drops and Seats in this well and same are still working, making a record of eight months use where a Standard Ball and Seat in the same well lasted an average of one week.

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cel's lamps were furnished by Dardonville, lampist, Broadway, New York.

The gas used was that of the New Haven Gas Light Co., made from best Newcastle coal, and of fair average quality.

The distance between the standard candle, and the illuminator sought to be determined, was constantly 150 inches—the photometer traversed the graduated bar in such a manner as to read, at any point where equality of illumination was produced the ratio between the two lights. I quote only single examples of the average results, and with as little detail as possible, but I should state that the operation of the photometer was so satisfactory that we obtained constantly the same figures when operating in the same way, evening after evening, and the sensitiveness of the instrument was such that a difference of one-half inch in its position was immediately detected in the comparative illumination of the two equal discs of light in the dark chamber. This is, I believe, a degree of accuracy not before obtained by a photometer.

Table of illuminating power of various artificial lights compared with Judd's patent candles as a unit.

Source of Light—	
Gas burning in Scotch fishtail tips, 4 feet to the hour	1: 5.4
Gas burning in Scotch fishtail tips 6 feet to the hour	1: 7.55
Gas burning in Cornelius fishtail tips, 6 feet to the hour	1: 6.2
Gas burning in English Argand burner 10 feet to the hour	1:16.
Rock oil, burning in 1-inch wick, camphene lamp, consuming 1¾ ounces of fluid the hour	1: 8.1
Carcel's mechanical lamp, burning best sperm oil, 2 ounces fluid to the hour, wick ⅞-inch	1: 7.5
Carcel's mechanical lamp burning Colza oil	1: 7.5
Camphene lamp, (same size as rock oil above) burning best camphene, 4 fluid ounces per hour	1:11.
"Diamond Light" by "sylvic oil," in 1½-inch wick, 4 ounces per hour	1: 8.1

From this table it will be seen that the rock oil lamp was somewhat superior in illuminating power to Carcel's lamp of the same size, burning the most costly of all oils. It was also equal to the "Diamond Light" from a lamp of one-half greater power, and consequently is superior to it in the same ratio in lamps of equal power. The camphene lamp appears to be about one-fifth superior to it, but, on the other hand, the rock oil surpasses the camphene by more than one-half in economy of consumption (i. e., it does not consume one-half so much fluid by measure,) and it burns more constantly. Compared with the Sylvic oil and the sperm, the rock oil gave on the ground glass diaphragm, the whitest disc of illumination, while in turn the camphene was whiter than the rock oil light. By the use of screens of different colored glass, all inequalities of color were compensated in the use of the photometer, so that the intensity of light could be more accurately compared. Compared with gas, the rock oil gave more light than any burner used except the costly Argand consuming 10 feet of gas per hour. To compare the cost of these several fluids with each other we must know the price of the several articles, and this varies very much in different places. Thus, gas in New Haven costs $4 per 1,000 feet, and in New York $3.50 per 1,000, in Philadelphia $2 per 1,000, and in Boston about the same amount.

Such sperm oil as was used costs $2.50 per gallon, the Colza about $2, the sylvic oil 50 cents, and the camphene 68 cents—no price has been fixed upon for the rectified rock oil.

I cannot refrain from expressing my satisfaction at the results of these photometric experiments, since they have given the oil of your company a much higher value as an illuminator than I had dared to hope.

Use of the Rock Oil as a Lubricator for Machinery

A portion of the rectified oil was sent to Boston to be tested upon a trial apparatus there, but I regret to say that the results have not been communicated to me yet. As this oil does not gum or become acid or rancid by exposure, it possesses in that, as well as in its wonderful resistance to extreme cold, important qualities for a lubricator.

Conclusion

In conclusion, gentlemen, it appears to me that there is much ground for encouragement in the belief that your company has in its possession a raw material from which, by simple and not expensive process, it may manufacture very valuable products.

It is worthy of note that my experiments prove that nearly the whole of the raw product may be manufactured without waste, and this solely by a well directed process which is in practice one of the most simple of all chemical processes.

There are suggestions of a practical nature, as to the economy of your manufacture, when you are ready to begin operations, which I shall be happy to make, should the company require it—meanwhile, I remain, gentlemen,

Your obedient servant,
B. SILLIMAN, Jr.,
Professor of Chemistry in Yale College.
New Haven, April 16, 1855.

LARGE PANAMA TANKERS

According to a report on Panama Canal oil traffic made by G. R. Hopkins, petroleum economist, the greater part of the oil cargoes up to the present time have been carried by tankers of about 7,500 tons, carrying about 10,000 tons of cargo. The transporting companies have found that for a long haul a large vessel could operate at a cost but slightly above that for a smaller vessel, which would make the transportation per barrel much cheaper for the large vessel. The result has been the supplanting of some of the smaller vessels by larger ones of 14,000 tons and capable of carrying 150,000 bbls. of oil.

GASOLINE TAX CONFERENCE

The recent conference of gasoline tax administrators from several western states, held in Salt Lake City, Utah, advocated uniform laws governing taxes on gasoline. It was brought out that on account of the interstate features involved, a group conference of tax administrators was held at Atlanta, Ga., August 20, and one will be held at Philadelphia September 22, after which the organization will be completed for the national conference to be held in St. Louis next November.

CENTRAL GASOLINE GAUGE

Among the new developments in equipment to be found in the Sikorsky biplane which Capt. Rene Fonck will fly from New York City to Paris are a riveted duralumin gasoline tank and a single central gauge; the gauge will show at a glance the quantity of fuel in any of the 14 reservoirs carrying the plane's 15,000-pound load.

AIR MAIL TO MEXICO

Mexico has made arrangements with the United States Post Office Department to connect with the air mail service between Fort Worth and Chicago and hence the transcontinental air service from Chicago to New York. In return, air mail from the United States to Mexico will be treated as special delivery post upon arrival in Mexico.

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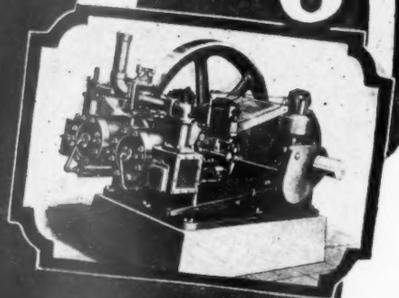

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CAPILLARY CONTROL IN THE FLUID DELIVERY FROM OIL AND GAS WELLS

By Stanley C. Herold
Petroleum Geologist, Stanford University, California

The present methods of analysis may seem in some particulars to be quite without precedent in the study of reservoirs. But why should we not take advantage of convenient and well established principles in geometry? If we turn to reflect upon the trail of events now stretching behind us, our absolute dependence upon expedient geometrical methods at once becomes evident. What mathematical "tricks" have we not performed with our curves? We have cut them on the left, in the middle, and on the right; we have stretched and compressed them horizontally and vertically, shifted them up or down, to the right or to the left; we have converted them into straight lines by taking their roots, powers and logarithms, or by dividing one by another; we have turned them clockwise and counterlockwise, given them "flapjack" turns, inverted them, held them to a mirror; we have subjected them to addition, subtraction, multiplication, division; we have differentiated and integrated them; we have compared ordinates with ordinates, or ordinates with areas; we have substituted an easily obtainable and accurately constructed one for another; and we have converted them into, or derived them from, their relative curves. We have done these things, not for the mere pleasure of juggling curves, but because each manipulation represented an actual and practical circumstance in the performance of the reservoir. Every conceivable act, either on the part of nature or on the part of the operator, appears to be capable of interpretation in the language of curves. We must try to master this language, for it promises to reveal many of the hidden secrets concerning production from our oil and gas wells as we know them in the field.

Returning again to the broad highway we must once more allow for the fact that oil and gas wells do not perform ideally. Let us take up the subject of theoretic performance in Capillary Control, wherein definitely known changes in the conditions of production from the reservoir prevent the fulfillment of the ideally perfect primary function curves of delivery.

Diagram for Natural Reservoir

641. When definitely known changes were made in the conditions of production from reservoirs of Hydraulic and Volumetric Controls, we found that these two classes of reservoirs behave according to the same laws in their theoretic performance. We agreed that this fact constituted their one feature in common, since both are physically alike. At any single instant in the life of the reservoirs both function alike; their difference is merely a matter of alterations or no alterations in the values of their functions with a succession of instants. In Hydraulic Control these values remain constant, whereas in Volumetric Control they vary with the function T as time remaining.

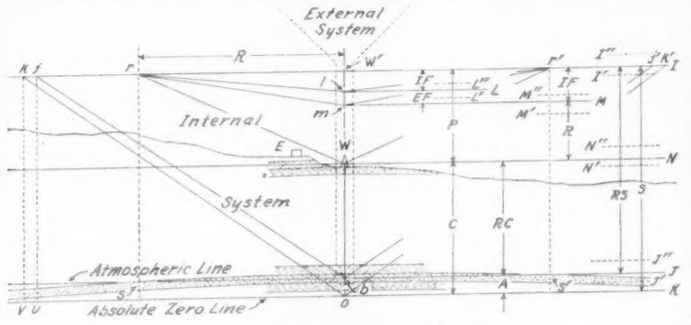
Imposed changes in the conditions of production from any reservoirs are made independently of the function T; consequently the reaction of these two controls to such changes must be the same. Upon this basis we used the same pressure diagram, Figure 277, when we studied their theoretic performance. In Capillary Control the imposed changes are also independent of T, but we do not have the same physical conditions within the reservoir as in the former controls. As a consequence the reaction of these reservoirs to such changes is quite distinct.

In Figure 641 we have the pressure diagram for Capillary Control, modeled more or less in agreement with Figure 277. The well at W penetrates the producing formation the point b. This formation is shown to lie on a gentle and extensive anticlinal fold in order to conform approximately to our specifications of an ideal reservoir and yet comply with known field conditions in general. It may or may not outcrop at the surface to the left of the figure in the manner shown in Figure 277, according to our discussion in Article 581.

642. We have the same 10 pressures to deal with as in the preceding controls. These are represented as distance between horizontal lines as before, all such lines being subject to upward or downward shifting except in the case of the absolute zero line K which must remain fixed. As in Volumetric Control all pressures whose measurements are shown to lie either entirely or partially above the line N decline during the course of production as a function of time; therefore the pressures may be grouped as in Article 507. The line N serves once more as the potential axis for the variable pressures, in as much as there appears a constant back pressure of the value C, indicating as it does a hole full of liquid at W. It is clear that all pressures are represented in equivalent heights of liquid. We have selected a reservoir which produces liquid—with gas—merely for the convenience of constructing an easily comprehended figure; otherwise we might have chosen one which produces gas alone. We may think in terms of liquid, and hold in mind the fact that the same diagram serves for gas.

The shifting of the various lines was fully discussed in Articles 280 to 289, inclusive. Let us avoid repetition, and imagine those articles inserted here without the least modification. Then we may continue at once with our argument on the new conditions.

In our treatment of reservoirs in the former controls we were able to consider the horizontal lines are extending indefinitely in all directions outward from the well. It is true, now that we think of it, that these lines pertained more exactly to the portion of the reservoir which we designated the "external system;" yet it seemed unnecessary to limit them to this part of the reservoir. In the past, whenever the solution of a problem of hydraulics required, the engineer extended his selected lines horizontally at will, and thereby arrived at his conclusions. Did we not do likewise? We did as long as we were dealing with Hydraulic Control. But now in Capillary Control we are



Capillary Control Pressure Diagram

Figure 641

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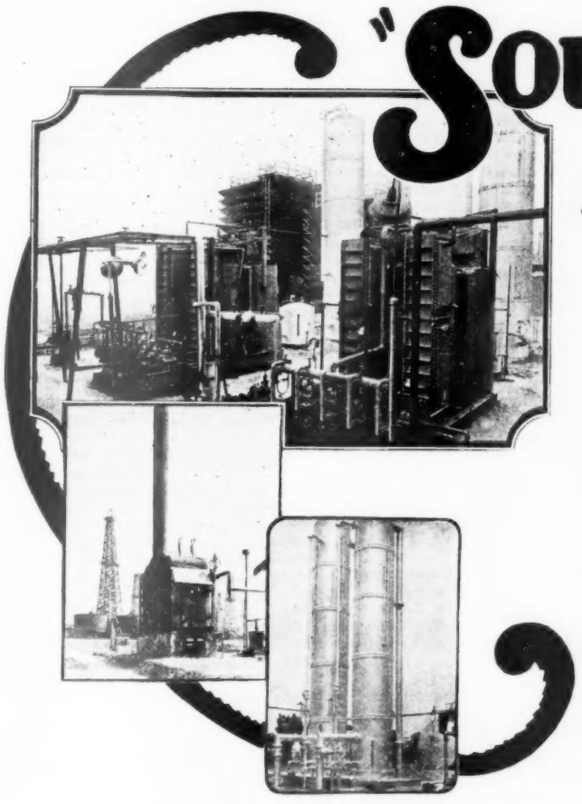

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forced to limit the lines precisely to the external system, so far as the measurements for the various pressures shown in the figure are concerned. For example, the measurements of P and C, although shown off at the right, pertain only to the values of these pressures at the vertical line through W. Let us see the reason for this.

The Pressure Cones

643. First we may consider P, the potential pressure. Reviewing our present situation briefly, we must recall the reasoning by which we constructed the pressure distribution diagram of Figure 565 c, and the more general pressure diagram of Figure 568 b. We must also recall how these diagrams were verified in fact by our experiments with the Jamin capillary tubes. The minute globules of liquid, separated by bubbles of gas, undergo a deformation when their equilibrium is disturbed, break and make if required to do so, in order to allow the passage of fluid, finally taking a position of rest in such a manner as to exert a small resistance p—one p for each globule in the line drawn outward from the well—against the pressure P. The P considered at that time is none other than the pressure P of our reservoir in the present case. Great numbers, perhaps millions, of globules diminish the value of P as we measure outward from W, or more exactly, from the point b at the bottom of the well. We may therefore represent the true state of affairs within the reservoir by drawing the line Wr, where the point r marks the limit of influence of P; that is, where there are a sufficient number of p's acting jointly so as to completely nullify the pressure P. We now have a triangle WrW' corresponding to the pressure distribution diagrams referred to. In our tests with the capillary tubes we dealt with an apparatus which lay, we may say, in one vertical plane, but our reservoir now extends in all directions from W. We must revolve the triangle about the vertical axis through W in order to represent conditions in space of three dimensions. It is quite evident that the revolution generates a cone, and since P is the potential pressure, we may designate this one as the "Potential Pressure Cone," thereby distinguishing it from other pressure cones which are also present.

Before we can continue with the subject of pressure cones it will be necessary to consider a principle which we have met before.

Harmonious Percentage Variation

644. In the study of Volumetric Control we found that the five pressures, potential, internal friction head, external friction head, total friction head, and residual pressure, all vary with time according to the following equation:

$$F = K T^n,$$

where F represents any particular one of them. (Article 508). We called this the principle of Harmonious Percentage Variation. The question now arises regarding the truth of such a variation of the same pressures in a reservoir of Capillary Control.

The potential pressure determines the fact that there shall be flow at the orifice, and the residual pressure determines the velocity of such flows. (Article 289.) In the test upon pressure-time relations for flow from a Jamin capillary tube (Article 576) we must have assumed that the two pressures varied in the same manner with time, for we relied upon a velocity of escape, which depends upon the residual pressure, to furnish the data on the decline of potential pressure. That we were justified in making the assumption follows from the discussion in Articles 577, 578 and 579, concerning the time required to empty a capillary tube. The individual spaces in the tube behave as vessels in Volumetric Control; therefore the question of control does not arise in connection with the variation of the pressures with time. All reservoirs in finite control have harmonious percentage variations between the five pressures with time, for it is essential that the friction heads do so whenever the residual and poential pressures vary in such a manner. The reasons for this were set forth in Article 576.

645. In Figure 641 the line Wr is straight. Considering the fact that the individual spaces in the porous formation, strung out from W to r, are in open communication with the orifice, and are actually behaving as minute reservoirs in Volumetric Control, it is impossible that the lines mr and lr can be other than straight. They are straight for the same reason that the lines M and L in Figure 277 are straight, although they are now inclined straight lines in place of the former horizontal ones. They must be inclined in order to be properly coordinated with Wr, the latter being the line N of Figure 277 placed in an inclined position.

Suppose we pass a vertical line from the position WW' toward the left in the direction of the point r. The intercepts on this line made by the lines Wr, mr, lr, and W'r, must continually maintain constant ratios as the line is moved. Why? In order to provide harmonious percentage variation between the pressures at the orifice. This is a consequence of the argument in the preceding paragraph. Now we learn an interesting fact concerning the inclined lines drawn from the points m and l; namely, that they must meet the line Wr at the point r, in the manner we have shown them. If they were to meet the line I at any other point, then the constant ratio of intercepts just mentioned would be impossible.

It is evident that the potential pressure cone is a composite one, being made up of the following:

Internal Friction Head Cone,
External Friction Head Cone,
Total Friction Head Cone, and the Residual Pressure Cone.

Thus we account for five of the pressure cones with which we must deal in our analysis. All these cones have the same base of radius R. In order to establish the fact that this is true we found it convenient to consider the principle of harmonious percentage variation, a principle founded on a variation with the function T, but we may obviously separate the notion of pressure-cone radius and the idea of time, for the reason that the five cones must have the same radius irrespective of time as a function of delivery. Like the derived functions a radius in common is independent of either ideal or erratic velocity of production from the well.

Five Other Cones

646. The other five pressures have their corresponding cones. These are enumerated as follows:

(a) The Static Pressure Cone, generated by revolving the line ok about the vertical axis through the well W.

(b) The Registered Static Pressure Cone, generated by revolving the line bj.

(c) The Atmospheric Cone, equal to the difference between the static and registered static pressure cones.

(d) The Constant Back Pressure Cone, equal to the difference between the static and potential pressure cones.

(e) The Registered Constant Back Pressure Cone, equal to the difference between the registered static and potential pressure cones.

The radii W'j and W'k are greater than R, but all three are mathematically related in regard to their lengths. Until such a time as we need to consider this relation in detail, let us assume its truth.

In Figure 641 it is to be noted that the static, registered static, potential, and internal friction head cones are shown as solids with their bases coinciding with the line I. Others appear as cones with another cone cut from them. It will be remembered that when Figure 277 was designed, the sequence of the horizontal lines between I and K was arbitrary, and we selected the given order at random. It is therefore evident that our lines in the present figure may be altered in such a manner as to give a solid cone in any case. We may consequently speak freely of all our solids as cones, without the necessity of mentioning a possible hollow space within them. In any case the actual space dimensions of the solids are the same, provided the inclined lines which generate them are properly drawn; and this we shall learn to do.

Purpose of Cones

647. Now that we have our pressure

cones defined and illustrated by drawing, what about them? What can be done with them? If we find their concept a difficult one to understand because of the physics and mathematics invoved, can we not ignore them? We have not had them heretofore, why bother with them even now?

These appear to be reasonable questions; yet we shall not attempt to answer them directly. Rather let us state briefly what purpose we have in describing them. When we are finished with the present treatise, we may trust these cones to stand or fall on their own merits or on their lack of them.

(a) We shall eventually show that each pressure cone has a volume cone and an energy cone associated with it, and that corresponding cones have identical radii for their bases. Now the potential volume cone is a most interesting one, for the very total amount of fluid which the well is to produce during its life comes from this cone. The well cannot produce one more molecule of fluid than is contained in it. Consequently, in contrast to Hydraulic and Volumetric Controls, we have a definite and limited drainage radius in Capillary Control; a radius which is, for a given reservoir, entirely dependent upon the radius of the potential pressure cone.

The energy contained within the potential energy cone is the very energy which expels the fluid from the orifice. Not one unit of energy outside this cone contributes to production.

(b) We consider that we have already shown how the potential pressure cone sets up new relative curves for all potential functions (Figure 586), as distinguished from the relative curves in Volumetric Control (Figure 442), where we have straight horizontal lines in place of inclined ones which generate cones. The potential pressure cone, with its associated potential volume cone, accounts precisely for ideal performance in this control.

(c) The potential pressure cone not only defies the path of decline for all primary functions of delivery, but also, as we shall eventually show, defines all secondary functions of delivery. Many phenomena we have noted in our oil and gas fields—too numerous to mention here—will be lucidly explained by means of the cones. More than this; several phenomena which, so far as we know, have not been noted, will be called to our attention. These, if detected, will serve admirably as a check upon our line of reasoning, where we venture beyond the known.

(d) We must confess that the cones in Figure 641 show conditions at the instant production begins from the reservoir in Capillary Control. As time elapses, or rather as time remaining grows shorter, the cones above the horizonal line N alter in radius and altitude. Eventually we shall follow the generating lines in their movements during the course of production. We shall show the conditions remaining behind, as the lines move, and we shall show what effect these conditions have upon a well which might be drilled sufficiently close so as to penetrate the cones of W. Conversely we shall show what effect such a well would have upon the very cones of W.

(e) We shall eventually show exactly how the fluid behaves throughout the cones during the course of production. We can, if we choose, represent molecules of fluid by a layer of round shot on a table, and move them in accordance with production from the reservoir.

(f) The study of the cones, and of the fluid within them, is not confined to changes which occur naturally in the course of production; that is, the study is not confined to the consideration of the fundamental primary functions connected with the function of time, but includes the consideration of the derived relations which are independent of time. Any alterations which may occur at the well W, in accordance with the usual three cases in theoretic performance (Articles 290 and 510), may be followed as completely. The existence of the cones requires us to use cuts on Figure 586 for such alternations instead of Figure 442.

Cases in Theoretic Performance

648. We have said that all the horizontal lines in Figure 641 except K are subject to shift as they might be forced to do in the previously studied controls. We are to consider their shifting to alter the altitudes of the appropriate cones, and it will suffice for the present if we imagine the inclined lines to move upward or downward with the vertices of the cones without altering their angles with the vertical lines through W, except at the vertices m and l, where the cones must always remain horizontally coextensive with the potential pressure cone, whatever radius its base may have.

We again deem it unnecessary to repeat the argument previously presented in connection with the three cases. Once more let us consider the present discussion a continuation of the former articles dealing with the separate conditions imposed by nature or my man upon the producing reservoir. We may review the cases, and make note of any changes due to Capillary Control.

Case 1. A change in the value of the external friction, brought about by the manipulation of the orifice. The table showing the status of pressures was given in Article 291. In this case we find the potential pressure unaltered. (See Article 511.)

The potential pressure cone is not affected in its dimensions; the vertex remains at W, and R continues as the radius. Within the cone, however, the lines mr and lr alter at the points m and l, respectively. The cones affected are

The Residual Pressure Cone, and
The External, Internal and Total Friction

Head Cones

There is a quantitative exchange of pressure units between the total friction head and the residual pressure, but after the new conditions for the orifice are once settled, all five pressures F proceed to decline with T in accordance with the principle of harmonious percentage variation. Figure 511 serves as our new potential pressure-time curve, and Figure 514 serves as the new residual pressure-time curve. We would not infer that like changes made in the external friction opposing production from two wells, one in each control, cause the same quantatitive alterations in these curves. The reaction to such changes can hardly be considered exactly identical with wells even in the same control.

The corresponding potential volume cone is not altered in this case. The total production from the well remains the same, although the velocity-time curve is different. We may take the per cent ratio between the new and old residual pressures, cut Figure 586 or 587 by a vertical line at this ratio, and observe the ratio on the velocity curve between the new and old rates. The new potential life indicated by this cut is inverse; it shows the ratio between the old and new life instead of the ratio between the new and the old life. (Article 513). If we replace the straight lines in Figure 512 by the proper sections of cubic parabolas, we obtain the correct velocity-time curve for this case. Alterations in external friction set up corresponding changes in the rectangles, and the curve A is a rectangular hyperbola, as before. Volume is now represented by one-fourth of the area of the rectangles in place of one-half. (Article 598).

649. Case 2.. A change in the value of the static pressure. (See Articles 302 and 518). There are two circumstances to consider: A change in the true static pressure, and a change in the apparent static pressure.

An open type reservoir in any control is one which is open to the atmosphere at some point other than the orifice, whereas a closed type reservoir is not in communication with the atmosphere except at the orifice. For examples we had the gravity solution tank for one type and the rigid gas tank for the other. In volumetric control natural reservoirs were considered to be normally of the open type (Article 474), but in capillary

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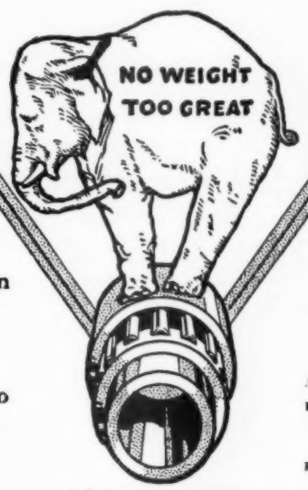

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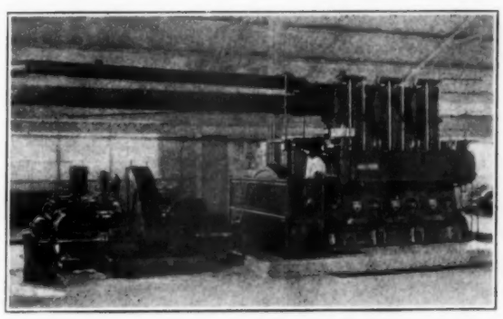

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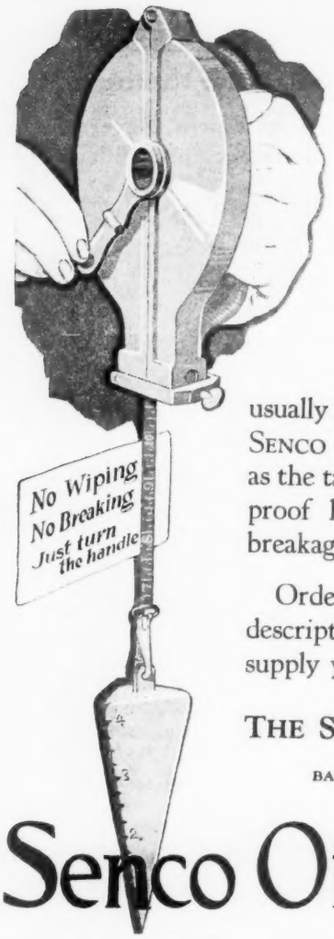

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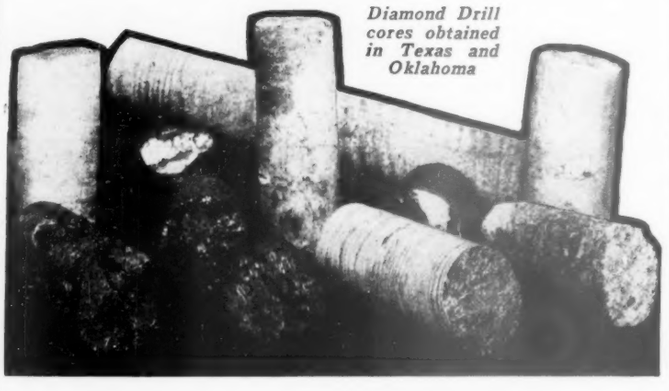

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control they are necessarily of the closed type. They are closed by strings of globules beyond the radius R from the well. It therefore becomes evident that any change in the value of the true static pressure must occur by processes at the orifice; namely, by flow on production, or by filling in the manner of the Zoar storage field operations.

For a given unaltered constant back pressure any changes in the true static pressure reflect upon the value of the potential pressure. The per cent ratio between the new and old potential pressures locates a vertical cut on the charts of Figures 586 or 587, and this cut determines the values of the other functions. The per cent life indicated is now a direct ratio. (Article 518).

Apparent changes in the value of the static pressure, caused by the introduction of new orifices whose pressure cones intercept those of the original well, give rise to problems which are better postponed for a time when the secondary functions of delivery are being considered.

650. Case 3. A change in the value of the constant back pressure. (See Articles 308 and 520). When this change is made all five pressures F alter concordantly, and there is quantitative exchange in pressure units between the potential and constant back pressures. There is accordingly a corresponding exchange between dimensions in the two pressure cones, an exchange which does not affect the static pressure cone, but one which necessarily affects the residual pressure and friction head cones that make up the potential pressure cone. In Figure 641 the line Wr moves downward when the constant back pressure is decreased, carrying mr and lr in percentage ratio with it, and the point r shifts to the left, increasing the radius R. This operation is reversed when the constant back pressure is increased. If the well is an old well, the continual removal of the liquid from the point b by means of a pump, thus taking off the weight of the column of liquid bw, causes the potential pressure cone to become coincident with the registered static pressure cone. If it is a gas well, these cones are coincident only at the time of open flow tests. When both oil and gas wells are completely closed in, the potential pressure cone becomes nonexistent.

As the pressure cones alter, so do the volume and energy cones. In fact, all functions take on new valves in accordance with the proper vertical cut on the relative curves.

The Vertical Cut Illustrated

651. Figure 651 illustrates a vertical cut determined by the point a greater than 100 per cent, and another determined by the point a' less than 100 per cent. both points are on the relative curve for pressure. This figure corresponds to Figure 522 for volumetric control.

The main frame in the figure is on a Cartesian plat, whereas the two extension frames are on parabolic, logarithmic plats, thus combining the advantages of each plat in its place. (Article 505). As before, the plats shown here are intended to be merely diagrammatic; for actual use, plats with finer divisions should be selected in order that interpolations may be made easily.

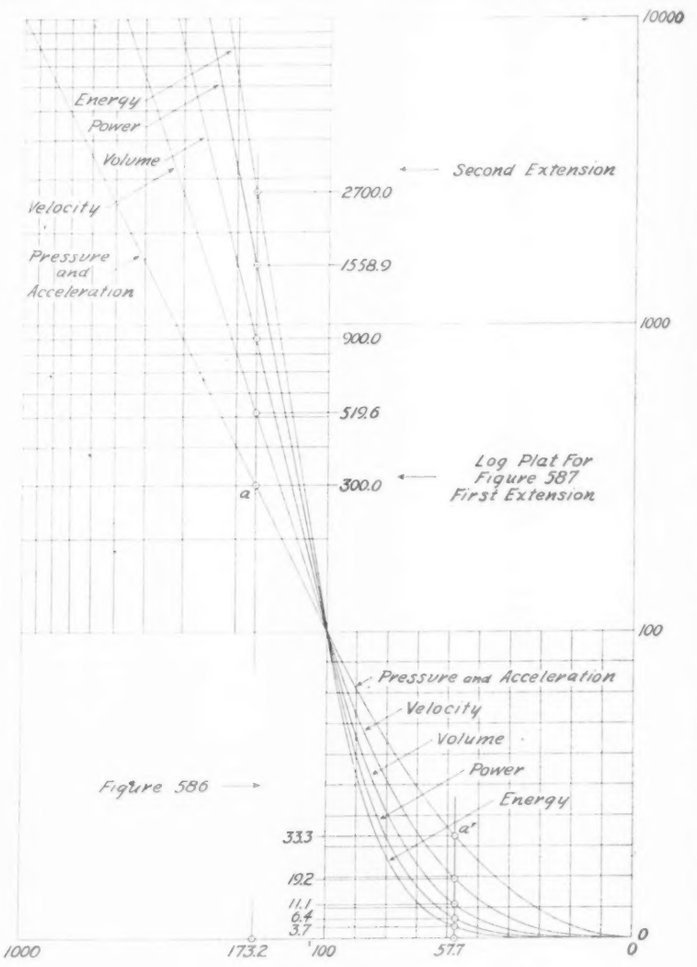

Figure 651

Let us take the same data for the well as we had before in Article 523. We shall assume that the well now being dealt with is in capillary control. The well produces 20 bbls. of oil per day. No assistance is rendered in the way of swabbing or pumping; the well overflows its casing at this rate. We find by test its potential pressure is 500 pounds per square inch. By placing the well on the pump we can take the weight of the column of fluid off the bottom of the well, and thereby increase the potential pressure to 1,500 pounds.

The ratio of the new and old values

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of potential pressure is obviously 300 per cent, indicated at the point a in the figure. The vertical cut at this point shows that the new velocity of production is 519.6 per cent, or 103.9 bbls. per day. Thus we know the size and speed of pump necessary in handling the oil. It is useless to try for a greater production rate by increasing the capacity of the pump. Nature will not permit a greater velocity without a further decrease in the constant back pressure. The new decline in velocity is shown by the relative curve; therefore we may observe convenient reductions to be made in the speed of the pump as time elapses, and perhaps at some time find it advantageous to replace the pump by a smaller one, transferring the first one to another well which requires a pump of its capacity.

Potential volume is increased to 900 per cent. Nine times the amount of oil will be recovered by putting on the pump. In an actual case we may easily determine whether the extra 800 per cent will warrant the cost of installing and operating the pump.

The potential power is increased to 1,558.9 per cent. This indicates the fact that 15.6 times the quantity of gas measured at atmospheric pressure, will be liberated from solution at the bottom of the well.

Potential energy is increased to 2,700 per cent. Twenty-seven times the amount of energy is made available for the expulsion of oil from the porous formation by increasing the potential pressure to 300 per cent. The energy cone becomes 27 times greater. Suppressed energy is transferred from a position below the X-axis to a new position above it, becoming transformed into potential energy. (Article 459).

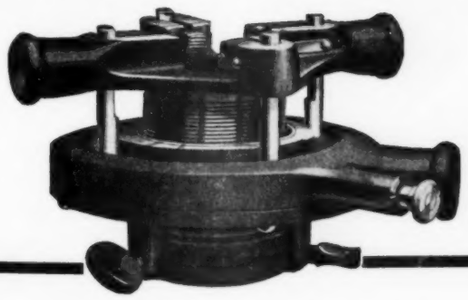
652. When we reflect upon the increase in potential energy, we realize how easily a well may be made into a good producer by the simple expedient of reducing the constant back pressure. We know from experience in drilling with a hole full of water that producing horizons may be easily passed through without detecting them; yet the removal of water often induces an enormous production. (It frequently happens that the potential pressure is increased to 1,000 per cent. If we should construct a third extension frame in Figure 651, we would find this increase giving a velocity rate of 3,162.3 per cent, total volume of 10,000 per cent, potential power of 31,623 per cent, and potential energy of 100,000 per cent.)

We have made the same vertical cut on the pressure-time curves in Figures 522 and 651. The different effects produced by a like change in potential pressure at the two wells are considerable. Let us tabulate the new values in the two cases:

Figure 522 Volumetric Control	Figure 651 Capillary Control
P = 300.0 per cent	P = 300.0 per cent
Vo = 300.0 per cent	Vo = 900.0 per cent
Ve = 173.2 per cent	Ve = 519.6 per cent
Ac = 100.0 per cent	Ac = 300.0 per cent
Po = 519.6 per cent	Po = 1558.9 per cent
E = 900.0 per cent	E = 2700.0 per cent
L = 173.2 per cent	L = 173.2 per cent

Except for pressure and life all functions on the right have valves three times those on the left. Had the potential pressure been increased to, say, 500 or 1,000 per cent, then the functions on the right would have been 5 or 10 times as great, respectively. It is of particular interest to note that whereas the rate of production increases to 34.6 bbls. per day for this change in pressure at the first well, it increases to 103.9 bbls. per day for the same change at the second well, although the effect upon the lives of the two wells is the same for both. We note also that the new value for the velocity on the left is less than the new value for the pressure, expressed as they are in percentages, whereas the opposite is true on the right. This is in accord with the relative positions of the velocity-time and pressure-time curves in the two controls, as shown in Figures 522 and 651.

In case the potential pressure is decreased to, let us say, 33 1/3 per cent, we must cut the main frame at the point a'. The per cent values obtained are the



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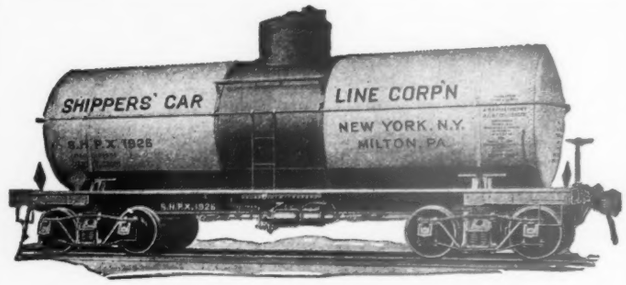

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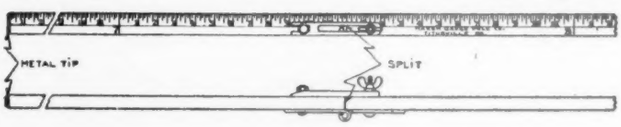

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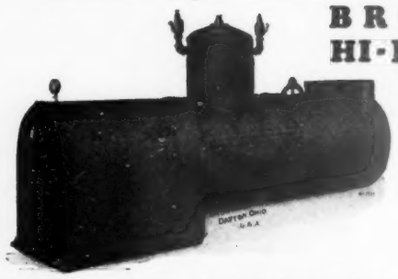

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reciprocals of the above values, for 300 and 33 1/3 per cents are reciprocals.

Zoar Storage and Theoretic Performance

653. We have observed that the relative curves serve in ideal and in theoretic performance. In order that they may serve in actual performance it is only necessary that we know definitely the percentage alteration in any one of the various reservoir functions. Ordinarily the observed alterations are those in potential pressure and velocity of production.

Suppose we consider the application of the principles of theoretic performance to the Zoar storage field operations. It will be remembered that the data furnished us pertained only to pressure and volume; therefore we are restricted to a consideration of these functions.

Case 1. The curve between pressure and volume for this storage reservoir was shown in Figure 630. The relation between these functions is absolutely independent of time in any manner. (Article 478). Case 1 involves time only; it does not concern alterations in potential pressure or in potential volume. An orifice may be manipulated in any manner without affecting the value of these functions. (Articles 512 and 513.) It becomes clear that we cannot discuss the theoretic performance of this reservoir in connection with this case.

Case 2. The Zoar storage field has already been mentioned in connection with this case in Article 649. Changes in the value of the true static pressure occur only on production and filling operations. To the ordinates in Figure 630 we need only add the value of the atmospheric pressure in order to convert the curve into one showing directly the relation between static pressure and volume.

The operation of this field is not concerned with apparent changes in the static pressure.

Case 3. Some interesting points may be brought to light in connection with this case. As Figure 630 stands, it shows the potential volume for a constant back pressure equal to the atmospheric pressure; it does not show the potential volume for any other constant back pressure. If the reservoir produces into a line having pressure, then the volume of gas available from the reservoir is less than the amount shown by the curve. For example, when the pressure gauge registers 200 pounds, we see that the reservoir has 240,000,000 cubic feet of gas, measured at atmospheric pressure, available on production against atmospheric pressure. A line pressure, say of 25 pounds, reduces the potential pressure to 175 pounds, or 87.5 per cent of the value shown by the gauge. By Figure 586 we find that a reduction in potential volume to 76.56 per cent. Now

76.56% or 240 = 183.7 millions;

that is, against this line pressure of 25 pounds the potential volume is reduced to 183.7 millions of cubic feet of gas.

In the same manner we might obtain values for the potential volume for several other imagined line pressures. If we did so, we would soon recognize an interesting fact; to-wit, that we may subtract the line pressure from the gauge pressure at any time, and with this as a new value for pressure, read directly in Figure 630 the potential volume available at such line pressure. Let us tabulate a few values which may be verified by referring to the figure:

Line Pressure	Potential Pressure	Potential Volume
0	200	240.0
10	190	216.6
20	180	194.4
25	175	183.7
30	170	173.4
40	160	153.6
50	150	135.0
100	100	60.0
200	0	0.

Figure 630 conforms to the requirements indicated in Figure 586. The table is based upon a gauge reading of 200 pounds merely for convenience. We may, in fact, treat any gauge reading in the same manner. Let us suppose we had taken a gauge reading of 100 pounds, and we wanted to know what volume of gas is obtainable with a line pressure of 20 pounds. As before, the potential pressure becomes 80 pounds, and corresponding to 80 in Figure 630 we find a potential volume of 38.4 millions.

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to the gauge pressure the volume available from the reservoir is zero. It should be clear to us that the amount of fluid to be produced from any reservoir cannot be stated unless we know the value of the constant back pressure, and that any statement concerning the one should be accompanied by a statement concerning the other. Many of our textbook writers on oil and gas production have completely overlooked this fact in their treatment of the theory regarding the total recovery from reservoirs.

Recovery by Vacuum

654. Suppose instead of a line pressure a vacuum is applied on the above reservoir; how may we determine the volume recoverable? The method to be applied is the same. Let us imagine that the pressure gauge registers 30 pounds, and by vacuum we remove 10 of the 15 pounds due to atmospheric pressure. The potential pressure becomes 40 pounds, which by Figure 630 corresponds to a potential volume of 9.6 millions of cubic feet. For 30 pounds potential pressure only 5.4 millions are available; therefore the vacuum increases the amount recoverable by 4.2 millions of cubic feet.

If it were possible to remove all atmospheric pressure, that is, produce against or into a perfect vacuum, we would then be able to recover all the gas within the reservoir. We cannot do this; nevertheless if we calculate the amount theoretically available at a constant back pressure equal to zero, we determine thereby the absolute contents of the reservoir in cubic feet of gas measured at atmospheric pressure. Say that the gauge pressure is 200 pounds; then the absolute pressure, 215 pounds, becomes the new potential pressure. In Figure 630 a pressure of 215 pounds indicates a volume of 277.4 millions. This is the absolute amount of gas in the reservoir when the gauge shows 200 pounds. Like calculations can be made for any other gauge reading. In fact, we may shift the scale of gauge pressures upward through a distance corresponding to 15 pounds, change the title of abscissas to read, "Absolute Volume of Gas in Storage in Millions of Cubic feet, Measured at Atmospheric Pressure," and read directly from the curve the absolute volume for any gauge reading.

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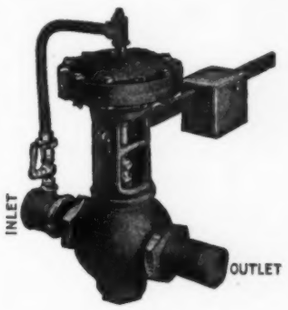

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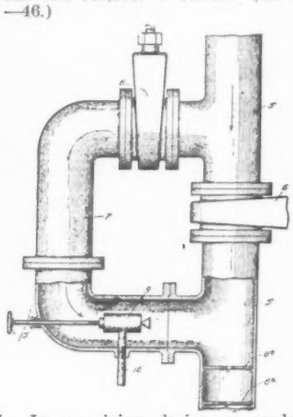
1,594,041. Mixing Apparatus for Treating Oils. Henry J. Broderson and William E. Bartels, Whiting, Ind., assignors to Standard Oil Co., Whiting, Ind., and Chicago, Ill., a corporation of Indiana. Filed March 24, 1924. Serial No. 701,395. 4 Claims. (Cl. 196—46.)

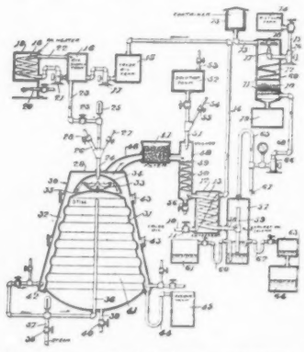


1. In a mixing device, a conduit through which material to be treated flows, a hollow head within said conduit having an opening directed in the direction of flow of liquid through the conduit, a valve member within said head for controlling the size of the opening and a conical member secured to said valve member exteriorly of the head and larger than the opening for controlling the direction of flow of material passing through said opening and means for supplying a treating reagent to the interior of said head.

1,594,625. Process for the Separation of Hydrocarbons From Earthy Matter. James M. McClave, Denver, Colo., assignor to Bituminous Sand Co., Denver, Colo., a corporation of Colorado. Filed November 27, 1922. Serial No. 603,666. 13 Claims. (Cl. 196—14.)

1. The process of treating material containing hydrocarbons and gangue to separate the former from the latter comprising adding to the material in the presence of water a colloidal clay which when mixed with water forms a gelatinous mass, and recovering the hydrocarbons.

1,594,296. Apparatus for Distilling Oils. Louis E. Lee, San Francisco, Calif. Filed November 9, 1921. Serial No. 513,940. 5 Claims. (Cl. 196—128.)



1. In an oil distilling apparatus, a still comprising a vertically disposed inner shell, a spray nozzle at the top of the still adapted to project a jet of oil against the upper end of said shell, a dome member disposed above the upper end of the shell and against which the oil is projected by the upper end of said shell, the impact of the oil spraying against said dome assisting in atomizing the oil, said dome being adapted to direct the oil to the outer surface of said inner shell over which the oil will flow, means for heating said shell for heating and vaporizing the oil passing thereover, and an outer shell surrounding the first

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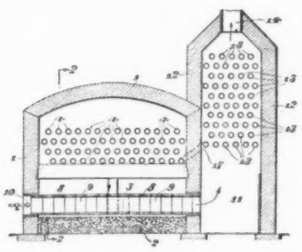
named shell and forming a vaporization space therebetween for receiving the vapors thrown off from the heating film of oil passing over the inner shell.

1,591,431. Heat-Transfer System. Arthur E. Nash, Philadelphia, and James S. Alcorn, Cynwyd, Pa. Filed December 24, 1924. Serial No. 757,940. 37 Claims. (Cl. 196—116.)



1. The method of raising the temperature of a fluid in stages, which comprises generating heat, dividing the heat generated into radiant and connection components, passing the fluid in succession through said stages while enclosing and preventing contact thereof with the surrounding atmosphere, and applying said heat components independently of each other to said material in the different stages.

1,596,594. Process for Treating Petroleum Emulsions. Melvin De Groote, St. Louis, and Wilbur C. Adams, University City, Mo., assignors to William S. Barnickel & Co., Webster Groves, Mo., a corporation of Missouri. Filed October 1, 1925. Serial No. 59,953. Two claims. (Cl. 196—4).

2. A process for treating petroleum emulsions, characterized by subjecting the emulsion to the action of a treating agent consisting of a condensation product containing a poly-cyclic, aromatic and a fatty material, together with a sulphonic group.

1,596,595. Process for Treating Petroleum Emulsions. Melvin De Groote, St. Louis, and Wilbur C. Adams, University City, Mo., assignors to William S. Barnickel & Co., Webster Groves, Mo., a corporation of Missouri. Filed October 1, 1925. Serial No. 59,955. Two claims. (Cl. 196—4).

1. A process for treating petroleum emulsions, characterized by subjecting the emulsions to the action of a treating agent consisting of an aromatic ester of an organic soap-foaming group, containing no chemically combined elements other than carbon, hydrogen and oxygen.

1,596,596. Process for Treating Petroleum Emulsions. Melvin De Groote, St. Louis, Mo., assignor to William S. Barnickel & Co., Webster Groves, Co., a corporation of Missouri. Filed October 7, 1925. Serial No. 61,134. Seven claims. (Cl. 196—4).

3. A process for treating petroleum emulsions, characterized by subjecting the emulsion to the action of a treating agent consisting of an alkali salt of a poly-cyclic, sulphonic acid.

6. A process for treating petroleum emulsions, characterized by subjecting the emulsion to the action of a treating agent consisting of a water soluble salt of a naphthalene, sulphonic acid.

1,596,597. Process for Treating Petroleum Emulsions. Melvin De Groote, St. Louis, Mo., assignor to William S. Barnickel & Co., Webster Groves, Mo., a corporation of Missouri. Filed October 7, 1925. Serial No. 61,135. Five claims. (Cl. 196—4).

1. A process for treating petroleum emulsions, characterized by subjecting the emulsion to the action of a treating agent consisting of an ester of a naphthenic acid.

5. A process for treating petroleum emulsions, characterized by subjecting the emulsion to the action of a treating agent consisting of a phenolic ester of a naphthenic acid.

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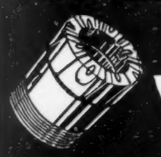

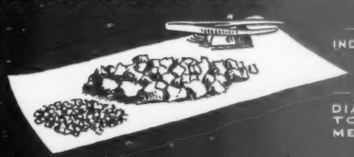

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NO EXCESS OIL YIELD SAYS JERSEY COMPANY

Reviewing the crude oil and gasoline situation, The Lamp, official publication of the Standard Oil Co. of New Jersey, says there is little fear of overproduction of crude oil this year; that the country has been and still is drawing on storage, despite recent increase in production; that unless consumption is less in the last half of the year—and it is usually larger than the first half—domestic production and imports will probably not be sufficient to meet demand.

Pointing out production and imports of crude to June 30, this year, were 26,000,000 bbls. less than the first half of 1925, and consumption of oil products gained 5 per cent, not including fire losses, there was a reduction of 18,000,000 bbls. in storage of crude and refined products.

"Comparing this reduction," says The Lamp, "to the 35,000,000-bbl. increase in stocks of crude and products which occurred in the first months of last year, it is apparent that the industry has improved its position as to stocks above ground."

Domestic production has increased 143,000 bbls. a day since January 1, largely due to Panhandle and Spindletop Pools. Further gains probably will occur, it states, but adds that unless consumption in the second half of 1926 is lower than the first half (as a rule consumption in the last half is higher) production and imports will not meet demand.

"The present year has been almost ideal so far as the bringing in of new producing fields is concerned," it goes on, "there being none to reach a daily output of 50,000 bbls. until the middle of summer. As a result, Mid-Continent crude prices have held firm this summer instead of breaking badly as in four out of the last five years."

Stating there is little cause for alarm as to overproduction, it adds: "If general business remains good there will be needed next year for domestic consumption and exports at least 40,000,000 bbls. more gasoline than the amount consumed and exported in 1926. More and better cracking facilities will supply part of this increase with a corresponding reduction in the current output of fuel oil, and the balance will come either from new crude production or from stocks."

It points out that demand for gasoline the first half of 1926 was 19.4 per cent larger while production gained 11 per cent so that production and imports of gasoline the first half of 1926 exceeded demand by but 1,546,000 bbls. against 9,541,000 bbls. excess the first half of 1925.

Gasoline storage on June 30 this year was almost identical with the same date, 1925, but represented 46 days' supply against 52 days' supply on June 30, 1925.

Mexican production is discussed, showing a decline to 88,000 bbls. in daily production between January 1 and June 30, this year. This is partly offset by Venezuela gaining 12,000 bbls. to 103,000 bbls. daily, while Colombia is a new factor, moving 28,000 bbls. daily.

LEGAL

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Cups—Leather—
Auer, C. A.

Cutters—Pipe—
Borden Co.
Nye Tool & Machine Works.
Trimont Mfg. Co.

Cylinders—Compressor—
Hope Engineering & Supply Co.

Cylinder Stocks—
Barnsdall Refining Co.
Pure Oil Co.
Texas Company, The.

D

Dehdrating Process—
Barnickel, Wm. S., & Co.

Dephlegmators—
Graver Corp.
National Gas Products Co.
Newton Process Mfg. Co.
Smith, A. O., Corp.

Depletion Reports—
American Appraisal Co.

Derricks—Steel—
Emsco Derrick & Equip. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C., & Co., Inc.
O'Brien Steel Construction Co.
Parkersburg Rig & Reel Co.
Superior Tube Co.

Derricks—Turnbuckle—
National Turnbuckle Derrick Co.

Diamonds—For Core Drilling—
Patrick, R. S.

Die Heads—Automatic Screw Cutting—
Landis Machine Co.

Die Heads—Bolt Threading—
Bignall & Keeler Mch. Works.
Landis Machine Co.

Die Heads—Stationary Pipe Threading—
Bignall & Keeler Mch. Works.
Cox & Sons Co., The.
Landis Machine Co.

Diesel Engines (See Engines)—

Dies—Pipe Threading—
Bignall & Keeler Mch. Works.
Cox & Sons Co., The.
Landis Machine Co.
Nye Tool & Machine Works.

Direct Driven Pumps (See Pumps)

Disc Bits (See Bits—Disc)—

Ditchers—Pipe Line—
Barber-Greene Co.
Buckeye Traction Ditcher Co.

Draw Works—
Lucey Mfg. Corp.
National Supply Co.
Titusville Iron Works Co.

Drillers Hose (See Hose)—

Drilling & Fishing Tools—
Acme Fishing Tool Co.
Baash-Ross Tool Co.
Bovaird & Seyfang Mfg. Co.
Bovlard Supply Co.
Bridgeport Machine Co.
Brown Tool Co., Inc.
Burns Tool Co.
Continental Supply Co.
Cushing, Tim, Tool & Supply Co.
Emsco Derrick & Equip. Co.
General Oil Tools Co.
Hinderliter Tool Co.
Hughes Tool Co.
International Supply Co.
Larkin & Co.
Leidecker Tool Co.
Lucey Mfg. Corp.
Murray Tool & Supply Co.
Oil Well Supply Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Spang & Co.
Star Drilling Machine Co.
U. S. Tool Co.

Drilling Engines (See Engines)—

Drilling Equipment—
Clark Brothers Co.
Hughes Tool Co.
O'Brien Steel Construction Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Star Drilling Machine Co.

Drilling Machines—
Leidecker Tool Co.
Oil Well Supply Co.
Star Drilling Machine Co.

Drilling Tools (See Drilling and Fishing Tools)—

Drills—Portable Air—
Chicago Pneumatic Tool Co.

Drive Shoes—
Bartlesville Supply Co.
Larkin & Co.

Drops and Seats—
Norris Brothers, Inc.

Drums (See Barrels)—

Dynamos—
Westinghouse Electric & Mfg. Co.

E

Ejectors—
Penberthy Injector Co.

Electrical Equipment—
Fairbanks-Morse & Co.
Fyle National Co.
Wico Electric Co.

Electric Drilling Equipment—
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Electric Steel Castings (See Castings—Electric—Steel)—

Elevators—Casing and Tubing—
Bovaird Supply Co.
Bridgeport Machine Co.
Dunn Mfg. Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Wilson Oil Tools Corp.

Elevators—Rod—
B. & A. Specialty Co.
D. & B. Pump & Supply Co.
Dunn Mfg. Co.

Enamels—
Arco Company, The.
Detroit Graphite Co.
Sherwin-Williams Co.

Engineers—Consulting and Contracting—
Brooks Engineering Corp.
Hope Engineering & Supply Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
National Petroleum Engineering Corp.
Power Specialty Co.
Westcott & Greis.
Widdell Engineering Co.

Engineers—Fire Protection—
Brooks Engineering Corp.
Foamite-Childs Corp.

Engineers—Oil Buildings—
Austin Co.
International Derrick & Equipment Co.

Engineers—Oil Mining—
Ranney Oil Mining Co

Engineers—Oil Treating—
Barnickel, Wm. S., & Co.
National Gas Products Co.

Engines—Crude Oil—
Continental Supply Co.
Western Machinery Co.

Engines—Diesel—
Bessemer Gas Engine Co.
Busch-Sulzer Bros. Diesel Engine Co.
Foos Gas Engine Co.
McIntosh & Seymour Corp.
Western Machinery Co.
Worthington Pump & Machinery Corp.

Engines—Drilling—
Ajax Iron Works.
Bessemer Gas Engine Co.
Bovaird & Seyfang Mfg. Co.
Brownell Co., The.
Buda Co.
Buffalo Gasolene Motor Co.
Clark Bros. Co.
Climax Engineering Co.
Franklin Valveless Engine Co.
Hercules Motor Corp.
Pattin Bros. Co.
Power Mfg. Co.
Republic Supply Co.
Titusville Iron Works Co.

Engines—Gas—
Bessemer Gas Engine Co.
Buda Co.
Buffalo Gasolene Motor Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Climax Engineering Co.
Continental Supply Co.
Cooper, C. & G., Co.
Emsco Derrick & Equipment Co.
Foos Gas Engine Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
International Supply Co.
Jones, S. M., Co.
Marion Mch., Fdy. & Supply Co.
Miller Improved Gas Engine Co.
National Supply Co.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Titusville Iron Works Co.
Waukesha Motor Co.
Western Machinery Co.

Engines—Gasoline—
Buda Co.
Buffalo Gasolene Motor Co.
Climax Engineering Co.
Continental Motors Corp.
Fairbanks-Morse & Co.
Hercules Motor Corp.
International Harvester Co. of America.
Waukesha Motor Co.
Western Machinery Co.

Engines—Oil—
Bessemer Gas Engine Co.
De La Vergne Machine Co.
Fairbanks-More & Co.
Franklin Valveless Engine Co.
Ingersoll-Rand Co.
International Harvester Co. of America.
McIntosh & Seymour Corp.
National Supply Co.
Oil Well Supply Co.
Power Mfg. Co.
Reid, Joseph, Gas Engine Co.
Western Machinery Co.

Engines—Semi-Diesel, Oil—
Chicago Pneumatic Tool Co.

Engines—Steam—
Ajax Iron Works.
Frick-Reid Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.

Evaporators—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.

F

Fabricators for Gasoline Plants and Refineries—
National Gas Products Co.
Stearns-Roger Mfg. Co.

Filters—Oil—
Burt Mfg. Co.

Fire Extinguishers—
Foamite-Childs Corp.

Fire Extinguishers — Recharge Service—
Foamite-Childs Corp.

Fishing Tools (See Drilling and Fishing Tools)—

Fittings—Dropped Forged Steel—
Vogt, Henry, Machine Co.

Fittings—Forged Steel—
Central Forging Co.

Fittings—Malleable & Cast Iron—
Bovaird Supply Co.
Crane Co.
Frick-Reid Supply Co.
Walworth Co.

Fittings—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Kennedy Valve Mfg. Co.
Metric Metal Works.
Oil Well Supply Co.
Reading Steel Casting Co.
Republic Supply Co.
United Iron Works, Inc.
Victaulic Co. of America.
Walworth Co.

Fittings—Steel—
Dayton Pipe Coupling Co.
Kerotest Mfg. Co.
Ohio Steel Foundry Co.
Walworth Co.

Flanges—Brass, Iron and Steel—
Jefferson Union Co.
Metric Metal Works.
Walworth Co.

Flange Unions—
Dart, E. M., Mfg. Co.
Gaso Pump & Burner Mfg. Co.

Flashlights—
National Carbon Co.

Floating Roofs and Decks—
Chicago Bridge & Iron Works.

Floodlights—
Pyle-National Co.

Forging Billets—
Andrews Steel Co.
Harrisburg Pipe & Pipe Bending Co.
Heppenstall Forge & Knife Co.

Forgings—
Champion Machine & Forging Co.

Fuel Oil (See Oil—Fuel)—

Fullers Earth—
Sinclair Refining Co.

G

Gas Holders—
Chicago Bridge & Iron Works.

Gaskets—
Garlock Packing Co.
McCord Radiator & Mfg. Co.

Gaskets—Fibre—
Durabla Mfg. Co.

Gas Masks & Safety Appliances—
Mine Safety Appliance Co.

Gasoline—
Crown Central Petroleum Co.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.

Gasoline—Natural—
Chestnut & Smith Corp.
National Gas Products Co.
Skelly Oil Co.
Warren Petroleum Co.

Gasoline Plant Equipment—
Bessemer Gas Engine Co.
Clark Brothers Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Widdell Engineering Co.

Gas Regulating Casinghead—
Davis, G. M., Regulator Co.
National Gas Products Co.

Gas Scrubbers—
National Gas Products Co.
Newton Process Mfg. Co.

Gauge Glass—High Pressure—
Durabla Mfg. Co.

Gauge Poles—
Marsh Gauge Pole Co.
Missouri Woodworking Co.

Gauges—Automatic Tank—
Brooks Engineering Co.

Gauges—Draft—
Brown Instrument Co.

Gauges—Oil—
Penberthy Injector Co.

Gauges—Pressure and Vacuum—
Bristol Co.
Brown Instrument Co.
Equitable Meter & Mfg. Co.
Metric Metal Works.

Gauges—Test—
Equitable Meter & Mfg. Co.
Metric Metal Works.

Gear Driven Pumps (See Pumps)

Gears—Cut—
Nuttall, R. D., & Co.

Gears—Reduction—
Emsco Derrick & Equipment Co.
Nuttall, R. D., & Co.

Gears—Reverse—
Emsco Derrick & Equipment Co.

Generators—
Westinghouse Electric & Mfg. Co.

Generators—Acetylene—
Oxweld Acteylene Co.

Generators—Turbine—
Moon Manufacturing Co.
Pyle-National Co.
Westinghouse Electric & Mfg. Co.

Glassware—Chemical for Laboratory Use—
Illinois Glass Co.

Governors—
Equitable Meter & Mfg. Co.
Gardner Governor Co.

Governors—Boiler Feed—
Chaplin-Fulton Mfg. Co.
Fisher Governor Co.

Grating—Steel—
Blaw-Knox Co.

Grey Iron Castings (See Castings)

H

Hammers—Chipping and Calking Pneumatic—
Chicago Pneumatic Tool Co.

Hammers—Riveting Pneumatic—
Chicago Pneumatic Tool Co.

Hangers—Iron and Steel—
Continental Supply Co.
Dodge Mfg. Corp.

Hangers—Tubing—
Hercules Tool Co.

Hatchets—Gauges and Thief—
Oil Conservation Engineering Co.

Heat Exchangers—
Carbondale Machine Co.
Griscom-Russell Co.
Hope Engineering & Supply Co.
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.

Heat Interchangers—Fluid—
Braun, C. F., & Co.
Ross Heater & Mfg. Co., Inc.

Hoists—Pneumatic, Geared and Universal—
Chisholm-Moore Mfg. Co.
Yale & Towne Mfg. Co.

Hoists—Portable—
Chisholm-Moore Mfg. Co.
Ford Chain Block Co.
Sullivan Machinery Co.
Wright Mfg. Co.
Yale & Towne Mfg. Co.

Hooks for Rods and Tubing—
B. & A. Specialty Co.
Dunn Mfg. Co.

Hose—
Fenwick-Reddaway Mfg. Co.

Hose—Drillers—
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Hose—Oil Suction and Discharge
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Hose—Rubber—
Goodyear Tire & Rubber Co.
United States Rubber Co.

Hypochlorite of Lime—
Mathieson Alkali Works, Inc.

I

Injectors—
Penberthy Injector Co.

Inspectors—Pipe—
Hunt, Robert W., Co.

Insulation Materials—
Celite Products Co.
General Insulating & Mfg. Co.
Johns-Manville, Inc.

Insurance—Fire—
Oil Insurance Association.

Insurance—Tornado—
Oil Insurance Association.

Iron—Ingot—
American Rolling Mill Co.

J

Jacks—Hydraulic—
Bridgeport Machine Co.

Jacks—Lifting—
Templeton, Kenly & Co., Ltd.

Jacks—Pumping—
American Mfg. Co. of Texas.
American Wells Works.
Bessemer Gas Engine Co.
Braden Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Norris, W. C.
Spang & Co.

Jars—
Arbon, Paul, & Co.
Bridgeport Machine Co.
Spang & Co.

Jar Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

K

Kerosene—
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.

L

Lacquers—
Arco Company, The.
Sherwin-Williams Co.

Lanterns—Electric—
Delta Electric Co.

Lead and Mixed Metal Products—
Eagle-Picher Lead Co.
National Lead Co.

Lead in Oil—
Eagle-Picher Lead Co.
National Lead Co.

Lead Wool and Containers—
Eagle-Picher Lead Co.

Lighting Equipment—
Pyle-National Co.
Westinghouse Electric & Mfg. Co.

Litharge—
Eagle-Picher Lead Co.
National Lead Co.

Loaders—Trucks—
Barber-Greene Co.

Long Distance Telephone—
American Telephone & Telegraph Co.

Lubricating Devices—
McCord Radiator & Mfg. Co.

Lubricators—
Ajax Iron Works.
Lunkenheimer Co.

Lubricators—Force Feed—
Hills-McCanna Co.
McCord Radiator & Mfg. Co.
Manzel Brothers Co.

M

Machine Tools—
Ryerson, Jos. T., & Sons, Inc.

Manholes—Tank—
Brooks Engineering Corp.

Manifolds—
Reid, Joseph, Gas Engine Co.

Meters—Gas—
Equitable Meter & Mfg. Co.
Foxboro Co., Inc.
Metric Metal Works.
Pittsburgh Meter Co.
Roots, P. H. & F. M., Co.
Westcott & Greis.

Meters—Electric—
Brown Instrument Co.

Meters—Gasoline—
Pittsburgh Meter Co.

Meters—Oil—
Pittsburgh Meter Co.

Molded Goods—Rubber—
Goodyear Tire & Rubber Co.

Motors—Electric—
Fairbanks-Morse & Co.
Westinghouse Electric & Mfg. Co.

Motors—Gasoline (See Engines—Gasoline)—

N

Naphtha—
Pure Oil Co.

Natural Gasoline (See Gasoline—Natural)—

Natural Gasoline Plant Equipment—
Campbell, J. A.
Cooper, C. & G., Co.
Griscom-Russell Co.
National Gas Products Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.
Westcott & Greis.

Nitrogen—
Linde Air Products Co.

Nozzles—Spray—
Power Plant Equipment Co.

O

Oil and Gas Pipe Line Construction—
Hope Engineering & Supply Co.

Oil Burners (See Burners—Oil)—

Oil Field Equipment—
Baker Casing Shoe Co.
Bridgeport Machine Co.
Gaso Pump & Burner Mfg. Co.
International Derrick & Equipment Co.
Iron King Mfg. Co.
Kaw Steel Construction Co.
National Supply Co.
Oil Well Supply Co.
Parkersburg Machine Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Reid, Joseph, Gas Engine Co.
Republic Supply Co.
Simplex Equipment Co.
Trumble Gas Trap Co.

Oil—Fuel—
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The.

Oil—Gas—
Crown Central Petroleum Corp.
Gulf Refining Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The.

Oil—Lubricating—
Barnsdall Refining Co.
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Humble Oil & Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Texas Company, The.

Oil—Tractor—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.
Skelly Oil Co.

Oiling Devices—
Lunkenheimer Co.

Oil Meters (See Meters)—

Oil Piping Equipment (See Fittings)—

Oil Reclaiming Process—
Barnickel, Wm. S., & Co.

Oil Well Cementing—
Halliburton Oil Well Cementing Co.

Oil Well Tools—
D. & B. Pump & Supply Co.
Hinderliter Tool Co.
Reed Roller Bit Co.
Titusville Forge Co.
U. S. Tool Co.

Over Shots—
Reed Roller Bit Co.
Regan Forge & Engineering Co.

Oxygen—
Linde Air Products Co.

P

Packer Release—
Acme Fishing Tool Co.

Packers—
Goodyear Tire & Rubber Co.
Guiberson Corp.
Larkin & Co.
Layne & Bowler Co.
Meier, E. C., Lubricating Co.
Oil Well Supply Co.
Regan Forge & Engineering Co.
Spang & Co.
United States Rubber Co.

Packing—
Crane Packing Co.
Durabla Mfg. Co.
Garlock Packing Co.
Goodrich, B. F., Rubber Co.
Imperial Belting Co.
Johns-Manville, Inc.

Packing—Metallic—
Crane Packing Co.

Paints—
Aluminum Co. of America.
American Asphalt Paint Co.
Arco Company, The.
Detroit Graphite Co.
Dixon, Joseph, Crucible Co.
Du Pont de Nemours, E. I. & Co., Inc.
Eagle-Picher Lead Co.
Eclipse Paint & Mfg. Co.
Hill, Hubbell & Co.
National Lead Co.
Sherwin-Williams Co.
St. Louis Surfacer & Paint Co.

Pipe—Cast Iron—
Greenspon's Jos., Sons Iron & Steel Co.
International Supply Co.
U. S. Cast Iron Pipe & Fdy. Co.

Pipe—Lead Chemical and Antimonial—
Eagle-Picher Lead Co.
National Lead Co.

Pipe—Steel—
Central Tube Co.
Continental Supply Co.
Greenspon's Jos., Sons Iron & Steel Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Murray Tool & Supply Co.
National Supply Co.
National Tube Co.
Republic Iron & Steel Co.
Ryerson, Jos. T., & Sons, Inc.
South Chester Tube Co.
Spang Chalfant & Co., Inc.
Superior Tube Co.
Taubman Supply Corp.
Wheeling Steel Corp.

Pipe—Wrought Iron—
Byers, A. M., Co.
Frick-Reid Supply Co.
Greenspon's Jos., Sons Iron & Steel Co.
Oil Well Supply Co.
Reading Iron Co.
South Chester Tube Co.
Superior Tube Co.
Taubman Supply Corp.

Pipe and Nipple Threading Machines—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Ryerson, Jos. T., & Sons, Inc.
Standard Engineering Co.

Pipe Clamps (See Clamps—Pipe)—

Pipe Grips—
Larkin & Co.

Pipe Headers—
National Tube Co.
Newton Process Mfg. Co.

Pipe Line Coatings—
Hill, Hubbell & Co.

Pipe Line Construction Tools—
National Transit Pump & Machine Co.

Pipe Line Equipment—
Gaso Pump & Burner Mfg. Co.

Pipe Screwing Machines—
Buckeye Traction Ditcher Co.

Pipe Straightening Machines—
W-K-M Co., Inc.

Pipe Suspension Device—
Stearns-Roger Mfg. Co.

Pipe Threaders—Power—
Williams Tool Corp.

Pipe Tools—
Armstrong Brothers Tool Co.
Nye Tool & Machine Works.
Ridge Tool Co.
Walworth Co.

Piping—Fabricated—
Midwest Piping & Supply Co.

Piping—Hard Rubber—
United States Rubber Co.

Piping—Steel & Iron—
Crane Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Power Piping Co.

Pistons—
Guiberson Corp.
Heppenstall Forge & Knife Co.

Pistons—Expansion—
Wilson Oil Tools Corp.

Pistons—Slush Pump—
Guiberson Corp.

Plugs—Bottom Water—
Guiberson Corp.

Pre-Heaters—
National Gas Products Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.

Preservatives—Asphalt—
American Asphalt Paint Co.

Pulleys—Wood, Iron and Steel—
Continental Supply Co.
Dodge Mfg. Co.

Pulling Machines—
Iron King Mfg. Co.
National Supply Co.
Safety Pulling Machine Co.

Pumpers—Long Stroke—
Farley Machine Co.

Pumping and Pulling Motors—Electric—
Westinghouse Electric & Mfg. Co.

Pumping Equipment—
American Well Works.
Axelson Machine Co.
Byron Jackson Pump Mfg. Co., Inc.
D & B Pump & Supply Co.
Farley Machine Co.
Goulds Pumps, Inc.
Jones, S. M., Co.
Myers, F. E., & Bros. Co.
Northrup Equipment Co.
Oil Well Supply Co.
Prescott Co.
Ratigan, J. P., Co.
Waukesha Motor Co.

Pumping Gear Units—
Nuttall, R. D., & Co.

Pumping Powers—
Bessemer Gas Engine Co.
Buda Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Marion Mch., Fdy. & Supply Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Spence Machine Co.
Titusville Iron Works Co.

Pumps—Boiler Feed—
Ajax Iron Works.
Byron Jackson Pump Mfg. Co., Inc.
Fairbanks-Morse & Co.
Gardner Governor Co.
Goulds Pumps, Inc.
Oil Well Supply Co.
Smith Separator Co.

Pumps—Centrifugal—
American Well Works.
Byron Jackson Pump Mfg. Co. Inc.
Fairbanks-Morse & Co.
Goulds Pumps, Inc.
Smith Separator Co.
Worthington Pump & Machinery Corp.

Pumps—Direct Driven—
Bessemer Gas Engine Co.
Smith Separator Co.

Pumps—Electric—
Prescott Co.
Smith Separator Co.

Pumps—Fuel Oil Service—
Blackmer Pump Co.
Goulds Pumps, Inc.
Northern Fire Apparatus Co.
Smith Separator Co.

Pumps—Fuel Oil Transfer—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co. Inc.

Pumps—Gasoline and Oil for Filling Stations—
Gilbert & Barker Mfg. Co.

Pumps—Gear Driven—
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
Prescott Co.
Smith Separator Co.

Pumps—Hot Oil—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Goulds Pumps, Inc.
Smith Separator Co.

Pumps—Pipe Line—
Byron Jackson Pump Mfg. Co., Inc.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
National Transit Pump & Machine Co.
Prescott Co.
Worthington Pump & Machinery Corp.

Pumps—Portable—
Gaso Pump & Burner Mfg. Co.

Pumps—Power—
Fairbanks-Morse & Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
Myers, F. E., Bro. & Co.
National Transit Pump & Machine Co.
Prescott Co.
Smith Separator Co.
Waukesha Motor Co.

Pumps—Refinery—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
National Transit Pump & Machine Co.
Northern Fire Apparatus Co.
Smith Separator Co.

Pumps—Rotary—
Blackmer Pump Co.
Goulds Pumps, Inc.
Northern Fire Apparatus Co.
Roots, P. H. & F. M., Co.

Pumps—Sand—
Bridgeport Machine Co.
Larkin & Co.
Smith Separator Co.

Pumps—Slush—
Gardner Governor Co.

Pumps—Steam—
Fairbanks-Morse Co.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Prescott Co.
Smith Separator Co.

Pumps—Suction—
Gaso Pump & Burner Mfg. Co.

Pumps—Vacuum—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Gaso Pump & Burner Mfg. Co.
Miller Improved Gas Engine Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.

Pumps—Water—
American Well Works
Byron Jackson Pump Mfg. Co., Inc.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
Northern Fire Apparatus Co.
Prescott Co.
Smith Separator Co.

Pyrometers—
Brown Instrument Co.
Republic Flow Meters Co.

R

Ratchet Pipe Cutters—
Toledo Pipe Threading Machine Co.

Ratchet Pipe Threaders—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Ratchet Reamers—
Nye Tool & Machine Works.

Ratchet Stocks and Dies—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Receiving Boxes—
Reid, Joseph, Gas Engine Co.

Recorders—Differential Pressure—
Equitable Meter & Mfg. Co.
Metric Metal Works.

Refinery Equipment—
American Radiator Co.
Blaw-Knox Co.
Braun, C. F., & Co.
Carbondale Machine Co.
Chicago Bridge & Iron Works
Graver Corp.
Griscom-Russell Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Appliance Co.
Petroleum Iron Works Co.
Power Piping Co.
Power Specialty Co.
Reid, Joseph, Gas Engine Co.
Ross Heater & Mfg. Co., Inc.
Ross-Meehan Foundries
Smith, A. O., Corp.
Smith Separator Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
United Iron Works, Inc.
Universal Oil Products Co.
Vogt, Henry, Machine Co.
Walsh & Weidner Boiler Co.
Westcott & Greis.
Widdell Engineering Co.

Refractories—Furnace, Stills and Baffles—
National Gas Products Co.

Refrigerating Machinery—
Carbondale Machine Co.
United Iron Works, Inc.
Vogt, Henry, Machine Co.

Regulators—
Fisher Governor Co.
Gilfillan Machine Works
Smith Separator Co.

Regulators—Gas—
Chaplin-Fulton Mfg. Co.
Davis, G. M., Regulator Co.
Equitable Meter & Mfg. Co.
Fisher Governor Co.
Metric Metal Works
National Gas Products Co.
Smith Separator Co.

Rental Service—
Bridgeport Machine Co.

Reversible Clutches—
Bessemer Gas Engine Co.

Rig Irons—
International Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.

Rigs—Drilling, All Steel—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Rigs—Portable Drilling—
National Supply Co.
National Turnbuckle Derrick Co.
Star Drilling Machine Co.

Rod Guides—
Meier, E. C., Lubricating Co.

Rogs—Gauge—
Missouri Woodworking Co.

Rods—Polish—
Jones, S. M., Co.

Rods—Pull—
Axelson Machine Co.
Columbus Sucker Rod Co.
Jones, S. M., Co.
Sheffield Steel Corp.

Rods—Sucker—
Axelson Machine Co.
Columbus Sucker Rod Co.
D & B Pump & Supply Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Sheffield Steel Corp.

Rods—Valve—
Jones, S. M., Co.

Roofing—Asbestos—
Johns-Manville, Inc.

Roofing—Galvanized Iron—
American Rolling Mill Co.

Rope Socket Metal—
Eagle-Picher Lead Co.

Rope—Manila—
Ajax Rope Co., Inc.
Bovaird Supply Co.
Republic Supply Co.

Rope—Wire—
Ajax Rope Co., Inc.
Bovaird Supply Co.
Bridgeport Machine Co.
Broderick & Bascom Rope Co.
International Supply Co.
Jarecki Mfg. Co.
Wickwire-Spencer Steel Corp.
Leschen, A., & Sons, Rope Co.
Williamsport Wire Rope Co.

Rotary Bit Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Rotary Drilling Equipment—
Emsco Derrick & Equipment Co.
Frick-Reid Supply Co.
International Derrick & Equipment Co.
Link-Belt Co.
Lucey Mfg. Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Titusville Iron Works Co.

Rotary Lines (See Rope—Wire)—

Rotary Pod—
Reed Roller Bit Co.

Rotary Tool Joints—
Bartlesville Supply Co.
Hughes Tool Co.

Rust Preventatives—
Dearborn Chemical Co.
Eagle-Picher Lead Co.

S

Sand Lines—Manila—
Ajax Rope Co., Inc.
Plymouth Cordage Co.

Sand Lines—Wire—
Ajax Rope Co., Inc.
Broderick & Bascom Rope Co.
Hazard Mfg. Co.
Wickwire-Spencer Steel Corp.

Screens—Oil Well—
Layne & Bowler Co.

Screens—Water Well—
Layne & Bowler Co.

Screws Temper—
Burns Tool Co.

Searles—Oil—
Pforzheimer, Carl H., & Co.

Separators—Centrifugal—
Miller, Max B., & Co.

Separators—Gas and Oil—
Smith Separator Co.

Separators—Steam—
Vola Engineering Equipment Co.

Sheet Lead—Chemical and Antimonial—
Eagle-Picher Lead Co.

Sheets—Corrugated, Black and Galvanized—
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Ryerson, Jos. T., & Son, Inc.
United Alloy Steel Corp.

Sheets—Iron—
American Rolling Mill Co.

Sheets—Steel—
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Sheffield Steel Corp.
United Alloy Steel Corp.

Shingles—Asbestos—
Johns-Manville, Inc.

Siding—Galvanized Iron—
American Rolling Mill Co.

Sleeves—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Sleeves—Split—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Smoke Stacks—
Donovan Boiler Works

Snuffers—Fire—
Simplex Equipment Co.

Sockets—
Acme Fishing Tool Co.
Bridgeport Machine Co.
Spang & Co.

Sockets—Sucker Rod—
Guiberson Corp.

Sockets—Swivel—
Arbon, Paul, & Co.

Sockets—Wire Rope—
Chicago Steel Foundry Co.

Soda Ash—
Mathieson Alkali Works, Inc.

Soda—Caustic—
Mathieson Alkali Works, Inc.

Solders—Bar and Wire—
Eagle-Picher Lead Co.
Hoyt Metal Co.

Spark Plugs—
Mosler Metal Products Corp.

Spears—
Acme Fishing Tool Co.
Brown Tool Co., Inc.

Sprockets—Power Transmission—
Ajax Iron Works
Chain Belt Co.

Stands—Vice—
Nye Tool & Machine Works

Steel—All Kinds—
Ryerson, Jos. T., & Son, Inc.

Steel—Alloy—
Central Steel Co.
Timken Roller Bearing Co.
United Alloy Steel Corp.

Steel—Bit—
Central Steel Co.
United Alloy Steel Corp.

Steel—Hot Rolled Strip—
Central Steel Co.

Steel—Special—
Andrews Steel Co.
Central Steel Co.
United Alloy Steel Corp.

Steel Fabricators—Structural—
Austin Co.
Braden Co.
Graver Corp.
International Derrick & Equipment Co.

Steel Pitmans—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Steel Plate Construction—
Chicago Bridge & Iron Works
Graver Corp.
Kaw Steel Construction Co.
Pennsylvania Engineering Works
Petroleum Iron Works Co.
Vogt, Henry, Machine Co.

Steel Wheels and Tug Rims—
International Derrick & Equipment Co.

Stills—
Blaw-Knox Co.
Graver Corp.
Kaw Steel Construction Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Iron Works Co.
Smith, A. O., Corp.
Vogt, Henry, Machine Co.
Widdell Engineering Co.

Stocks and Dies—
Borden Co.
Nye Tool & Machine Works
Toledo Pipe Threading Machine Co.

Stuffing Boxes—
Axelson Machine Co.
Kansas City Hay Press Co.

Sulphuric Acid—
Eagle-Picher Lead Co.

Superheaters—Steam—
Power Plant Equipment Co.

Swabs—
Arbon, Paul, & Co.
Burt Corporation
Guiberson Corp.
Simplex Equipment Co.

Swedge Nipples—
Dresser, S. R., Mfg. Co.
Harrisburg Pipe & Pipe Bending Co.

Swing Line Equipment—
Brooks Engineering Corp.

Swivels—
Layne & Bowler Co.
Lucey Mfg. Corp.
Titusville Iron Works Co.

T

Tachometers—
Brown Instrument Co.

Tank Equipment—
Brooks Engineering Corp.
Oil Conservation Engineering Co.

Tanks—Bolted—
Butler Mfg. Co.
Columbian Steel Tank Co.
Maloney Tank Mfg. Co.
Parkersburg Rig & Reel Co.

Tanks—Bulk Station—
Butler Mfg. Co.
Graver Corp.

Tanks—Cylindrical—
Graver Corp.
Petroleum Iron Works Co.

Tanks—Elevated Steel—
Chicago Bridge & Iron Works
Graver Corp.

Tanks—Field Storage—
American Car & Foundry Co.
Donovan Boiler Works
Graver Corp.
Kaw Steel Construction Co.
Kewanee Boiler Co.
Maloney Tank Mfg. Co.
Petroleum Iron Works Co.
Pittsburgh-Des Moines Steel Co.
Riter-Conley Co.
United Iron Works, Inc.

Tanks—Horizontal Storage—
Graver Corp.
Kaw Steel Construction Co.
Maloney Tank Mfg. Co.

Tanks—Run Down—
Chicago Bridge & Iron Works
Donovan Boiler Works
Graver Corp.
Kaw Steel Construction Co.
Newton Process Mfg. Co.

Tanks—Steel Storage—
Chicago Bridge & Iron Works

Tanks—Truck—
Butler Mfg. Co.
Columbian Steel Tank Co.

Tanks—Underground—
Butler Mfg. Co.
Gilbert & Barker Mfg. Co.
Graver Corp.
Kewanee Boiler Co.
Pittsburgh-Des Moines Steel Co.

Tanks—Welded—
Chicago Bridge & Iron Works
Graver Corp.
Pennsylvania Engineering Works

Taper Taps—
Hughes Tool Co.

Tapes—Measuring for Oil Gauging—
Lufkin Rule Co.
States Engineering Co.

Thermometers—Indicating and Recording—
American Shaeffer & Budenberg Corp.
Bristol Co.
Brown Instrument Co.

Thermometers—Resistance—
Brown Instrument Co.

Threading Machines—
Bignall & Keeler Machine Wks.
Cox & Sons Co., The
Landis Machine Co.

Thread Protectors—
Spang & Co.

Tires—Automobile—
Continental Supply Co.

Tires—Pneumatic & Solid—
Kelly-Springfield Tire Co.

Tires—Truck—
Kelly-Springfield Tire Co.

Tongs—
Bridgeport Machine Co.
Wilson Oil Tools Corp.

Tongs—Back Up—
Williams, J. H., & Co.

Tongs—Break Out—
Reed Roller Bit Co.
Williams, J. H., & Co.

Tongs—Casing—
Dunn Mfg. Co.
Guiberson Corp.

Tongs—Chain Pipe—
Armstrong Bros. Tool Co.
Williams, J. H., & Co.

Tongs—Pipe—
National Transit Pump & Machine Co.

Tongs—Rotary—
Dunn Mfg. Co.

Tongs—Tool Joint—
Guiberson Corp.
Hughes Tool Co.
Reed Roller Bit Co.

Tongs—Tubing—
Dunn Mfg. Co.

Tool Chests—Pipe—
Nye Tool & Machine Works

Tool Joints—
Bridgeport Machine Co.
Federal Supply Co.
Hughes Tool Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Regan Forge & Engineering Co.

Torches—
Oxweld Acetylene Co.

Towers—
Graver Corp.

Tractors—
Cleveland Tractor Co.
International Harvester Co. of America.

Trailers—
Spencer Trailer Co.

Transmission Belt—Rubber—
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Transmission Lining—
Stanley Belting Corp.

Traveling Block—
Lucey Mfg. Corp.
Regan Forge & Engineering Co.
Wright Mfg. Co.

Trenchers—Vertical Boom—
Barber-Greene Co.

Trucks—Motor—
Ford Motor Co.
General Motors Truck Co.
Graham Brothers
International Harvester Co. of America

Tubes—Boiler, Charcoal Iron—
Byers, A. M., Co.
Reading Iron Co.

Tubes—Boiler Steel—
Continental Supply Co.
National Tube Co.
Ryerson, Jos. T., & Sons, Inc.

Tubing—
Babcock & Wilcox Tube Co.
Byers, A. M., Co.
Central Tube Co.
Continental Supply Co.
National Tube Co.
Pittsburgh Steel Products Co.
Reading Iron Co.
Republic Iron & Steel Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.
Wheeling Steel Corp.

Tubing Catchers—
Dunn Mfg. Co.
Guiberson Corp.

Tubing Protectors (See Rod Guides)—

Tubular Goods—
Babcock & Wilcox Tube Co.
Central Tube Co.
Continental Supply Co.
Oil Well Supply Co.
Pittsburgh Steel Products Co.
Republic Iron & Steel Co.
Spang, Chalfant & Co., Inc.
Wheeling Steel Corp.

Tubular Goods—Wrought Iron—
Byers, A. M., Co.
Reading Iron Co.

Turbines for Lighting Equipment
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

U

Underreamer Body Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Underreamers—
Bridgeport Machine Co.
Brown Tool Co., Inc.
Guiberson Corp.
Wilson Oil Tools Corp.

Unions—
Central Forging Co.
Dart, E. M., Mfg. Co.
Jefferson Union Co.

V

Valuations—
American Appraisal Co.

Valves—Blow-Off—
Homestead Valve Mfg. Co.
Merco Nordstrom Valve Co.

Valves—Brass & Bronze—
Homestead Valve Mfg. Co.
Lunkenheimer Co.
Reading Steel Casting Co.
Walworth Co.

Valves—Cast Steel—
Chapman Valve Mfg. Co.
Homestead Valve Mfg. Co.
Walworth Co.

Valves—Check—
Gaso Pump & Burner Mfg. Co.
Lunkenheimer Co.
Walworth Co.

Valves—Drop Forged Steel—
Edwards Valve & Mfg. Co.
Vogt, Henry, Machine Co.

Valves—Gate—High and Low Pressure—
Chapman Valve Mfg. Co.
Crane Co.
Darling Valve & Mfg. Co.
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co.
Ludlow Valve Mfg. Co.
Lunkenheimer Co.
Murray Tool & Supply Co.
Powell, Wm., Co.
Walworth Co.

Valves—Iron—
Chapman Valve Mfg. Co.
Lunkenheimer Co.
Merco Nordstrom Valve Co.
Reading Steel Casting Co.
Walworth Co.

Valves—Metal Pump—
Durable Mfg. Co.

Valves—Pump—
United States Rubber Co.

Valves—Relief—Supersensitive—
Davis, G. M., Regulator Co.

Valves—Steel—
Chapman Valve Mfg. Co.
Edward Valve Mfg. Co.
Kerotest Mfg. Co.
Lunkenheimer Co.
Metric Metal Works
Powell, Wm., Co.
Reading Steel Casting Co.
Walworth Co.

Valves—Tank Vent—
Brooks Engineering Corp.
Oil Conservation Engineering Co.

Valves—Working Barrel—
Atlas Bail Co.
Axelson Machine Co.
D & B Pump & Supply Co.
Hough, Charles N., Mfg. Co.
Northrup Equipment Co.
Oil Well Supply Co.

Varnishes—
Arco Company, The
Detroit Graphite Co.
Sherwin-Williams Co.

Ventilators—
Burt Mfg. Co.

Vises—Bench—
Nye Tool & Machine Works

Vises—Pipe—
Nye Tool & Machine Works

Vises—Post—
Nye Tool & Machine Works

W

Wagons—Truss Wheel—
Athey Truss Wheel Co.

Walking Beams—Steel—
Emsco Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Water Cooling Systems—
Power Plant Equipment Co.

Water Softeners and Filters—
Butler Mfg. Co.
Graver Corp.

Wax—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.

Weight Indicators—
Hughes Tool Co.

Welding Accessories—Electric—
Wilson Welder & Metals Co.

Welding and Cutting Apparatus—
Oxweld Acetylene Co.

Welding Machines—Electric—
Wilson Welder & Metals Co.

Welding Supplies—
Oxweld Acetylene Co.

Welding Wire—
Frick-Reid Supply Co.
Oxweld Acetylene Co.
Wilson Welder & Metals Co.

Well Shooting—
Eastern Torpedo Co.
Kinley, M. M.
Zero Hour Torpedo Co.

Wheels—Pipe Cutter—
Nye Tool & Machine Works

Winches—
Braden Co.
Brooks Engineering Co.
Oil Conservation Engineering Co.

Wire Lines (See Cables—Steel)—

Wood Patterns and Models—
Gaso Pump & Burner Mfg. Co.

Working Barrels—
Axelson Machine Co.
D & B Pump & Supply Co.
D. & N. Specialty Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hough, Charles N., Mfg. Co.
McGregor Working Barrel Co.
Norris, W. C.
Northrup Equipment Co.
Oil Well Supply Co.

Wrenches—Closet Spuds—
Nye Tool & Machine Works

Wrenches—Drop Forged—
Williams, J. H., & Co.

Wrenches—Pipe—
Trimont Mfg. Co.
Walworth Co.

Wrenches—Ratchet—
Dresser, S. R., Mfg. Co.
Nye Tool & Machine Works

Z

Zinc Oxide—
Eagle-Picher Lead Co.

Oklahoma-Kansas and Eastern Pipeline Report

OKLAHOMA-KANSAS PIPELINE STATEMENT FOR JULY

Runs

	Month	Daily Av.
*Prairie Pipe Line Co.	4,061,000	131,000
Gulf Pipe Line Co.	1,294,335	41,753
Texas Pipe Line Co.	620,352	20,011
Magnolia Pet. Co.	1,197,214	38,620
Empire Pipe Line Co.	701,728	22,636
Cosden Pipe Line Co.	798,341	25,753
Sinclair Pipe Line Co.	1,817,530	58,630
*Other lines	7,731,000	251,000
Total July	18,271,500	589,403
Total June	17,014,842	567,161
Difference	1,256,658	22,242

Shipments

	Month	Daily Av.
†Prairie Pipe Line Co.	4,234,294	136,590
Gulf Pipe Line Co.	1,112,450	35,886
Texas Pipe Line Co.	748,852	24,157
Magnolia Pet. Co.	1,548,204	49,942
Empire Pipe Line Co.	817,578	26,373
Cosden Pipe Line Co.	841,880	27,157
†Sinclair Pipe Line Co.	2,515,377	81,141
*Other lines	7,967,000	257,000
Total July	19,785,635	638,246
Total June	19,357,803	645,260
Difference	427,832	7,014

Stocks

*Prairie Oil & Gas Co.	27,450,000
*Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line and Gypsy Oil	6,582,110
The Texas Company	2,978,951
Magnolia Pet. Co.	4,136,562
Empire Pipe Line Co.	2,620,291
Cosden Pipe Line Co.	1,873,424
*Sinclair Crude Oil Purchasing Co.	18,000,000
Carter Oil Co.	12,708,112
*Other lines	9,300,000
Total July	87,649,450
Total June	89,443,202
Difference	1,793,752

*Estimated.

†Prairie shipments include Texas crude oil. Sinclair shipments include Texas and Wyoming crude oil.

Note: Stocks do not include 4,800,000 bbls. of crude oil held in storage on private tank farms and leases.

EASTERN PIPE LINES

Runs From Wells

In the following table will be found the regular receipts from wells by various pipelines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for June and July.

	June, '26	July, '26
Nat. Transit	169,062.33	163,355.48
S. W. Pa. Pipe	96,302.81	101,686.03
Eureka Pipe	388,529.04	392,989.67
Buckeye P. L. (Macksburg)	317,931.59	306,269.80
Buckeye P. L. (Cleveland)	12,694.00	11,170.47
Buckeye P. L. (Lima, etc.)	139,350.89	137,149.47
Indiana P. L.	11,401.12	10,828.41
Cumberland P. L.	271,131.47	282,211.58
N. Y. Transit	20,964.71	21,334.18
Tidewater P. L.	165,122.06	168,664.93
Pure Oil	171,908.20	176,480.50
Emery P. L.	53,721.55	53,064.83
Indian Ref.	98,207.86	104,990.12
Paragon Dev.	222.32	22,718.44
Pittsburgh P. L.	7,380.66	6,486.24
Total	1,923,930.61	1,959,400.15
Daily average	64,131.02	63,206.46

Note—Indian Refining Co. also reported other receipts of 254,924.52 bbls. Paragon Refining Co. had other receipts of 154,728.15 bbls. Paragon Development had other receipts of 2,162.99 bbls. Pure Oil had other receipts of 72,402.22 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipelines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for June and July:

	June, '26	July, '26
Nat. Transit	309,943.34	370,891.32
S. W. Pa. P. L.	410,424.53	409,458.00
Eureka P. L.	157,187.82	194,592.54
Buckeye P. L. (Macksburg)	143,825.27	154,972.89
Buckeye P. L. (Cleveland)	969.85	1,408.19
Buckeye P. L. (Lima, etc.)	889,104.44	895,654.71
Indiana P. L.	963,293.95	995,699.54
Cumberland P. L.	168,812.76	168,426.65
N. Y. Transit	609,865.71	648,783.66
Northern P. L.	156,433.96	185,783.37
Tidewater P. L.	112,918.87	107,643.02
Pure Oil	251,768.14	238,473.30
*Emery P. L.	51,241.24	54,161.96
Paragon Ref.	138,805.17	159,136.74
Indian Ref.	411,634.57	372,128.62
Paragon Dev.	24,375.86	24,942.64
Pittsburgh P. L.	7,111.28	7,169.75
Total	4,807,716.76	4,989,308.90
Daily average	160,257.23	160,945.45

Gross Stocks

The gross stocks held by various pipelines in the oil producing sections of New York Pennsylvania, West Virginia, Ohio, Indiana and Kentucky, at the close of June and July, were as follows:

	June, '26	July, '26
Nat. Transit	1,092,580.36	1,053,770.84
S. W. Pa. P. L.	691,520.32	683,787.99
Eureka P. L.	1,505,989.62	1,483,121.26
Buckeye P. L. (Macksburg)	417,389.77	415,112.82
Buckeye P. L. (Cleveland)	96,462.04	85,333.91
Buckeye P. L. (Lima, etc.)	2,236,314.81	2,428,415.17
Indiana P. L.	556,955.26	576,702.06
Cumberland P. L.	596,899.55	633,819.77
Southern P. L.	364,453.41	476,270.69
N. Y. Transit	902,682.42	822,714.93
Northern P. L.	463,514.79	433,011.93
Pure Oil	439,660.41	450,205.94
Emery P. L.	38,147.78	37,324.53
Paragon Ref.	41,138.98	36,255.80
Indian Ref.	123,370.73	110,400.30
Paragon Dev.	4,340.27	4,313.95
Pittsburgh P. L.	4,483.60	4,124.64
Total	9,585,904.12	9,734,686.53
Increase	54,146.72	148,782.41

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipelines at the close of June and July showing the gross stocks of the above fields:

	June, '26	July, '26
Pennsylvania	3,941,471.18	4,047,418.29
Lima	878,020.72	859,783.19
Kentucky	1,131,573.86	1,249,214.91
Mid-Continent	3,592,623.19	3,502,567.49
Illinois	42,815.17	75,702.65
Total	9,585,904.12	9,734,686.53

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1923	1924	1925	1926
January	75,790	62,638	56,831	55,630
February	71,092	68,023	60,606	60,394
March	76,592	68,721	60,575	61,644
April	75,614	71,058	63,062	63,019
May	77,365	63,942	59,217	60,580
June	77,593	63,230	61,270	64,121
July	71,879	64,208	62,639	63,606
August	76,910	59,942	69,686	.....
September	72,358	62,930	62,510	.....
October	76,256	64,976	60,995	.....
November	70,762	56,282	59,350	.....
December	69,271	55,814	57,974	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1923	1924	1925	1926
January	171,067	145,518	157,889	156,056
February	164,219	148,732	160,863	156,488
March	185,487	147,098	154,591	160,239
April	170,751	147,611	151,429	152,371
May	177,102	134,997	146,995	160,988
June	173,598	143,010	149,467	160,257
July	168,330	124,187	161,338	160,945
August	142,776	123,120	161,730	.....
September	137,266	127,325	156,719	.....
October	134,697	123,170	145,388	.....
November	131,426	124,400	143,582	.....
December	139,909	151,392	150,162	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1924	1925	1926
January	12,907,202	11,353,276	9,859,170
February	11,844,068	11,192,924	9,679,354
March	10,906,752	11,168,297	9,438,292
April	10,922,742	11,062,082	9,805,851
May	11,335,309	11,207,562	9,531,757
June	11,544,204	11,093,796	9,585,904
July	12,062,361	11,067,453	9,734,687
August	12,221,676	10,974,481	.....
September	12,206,836	10,781,753	.....
October	12,664,061	11,086,850	.....
November	12,268,530	11,068,158	.....
December	11,583,680	10,458,445	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above.

	Receipts	Shipmts.	Stocks
1925—			
July	2,639.34	3,174.10	11,550.29
August	3,216.97	1,577.99	13,189.27
September	2,929.99	5,362.05	10,767.21
October	2,869.75	1,499.34	12,137.62
November	2,759.66	2,571.32	12,283.40
December	2,661.87	3,441.67	11,503.60
1926—			
January	2,990.16	1,478.35	13,015.41
February	2,580.23	2,776.19	12,819.45
March	2,754.62	1,732.77	13,841.30
April	3,137.40	4,519.68	12,459.02
May	2,933.29	2,096.35	13,295.96
June	3,217.62	1,655.15	14,858.43
July	3,025.86	4,075.11	13,809.18

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Aug. 1	2,529,844.32
Runs from wells	684,910.04
Other receipts	230,983.04
Regular deliveries	436,288.50
Other deliveries	672,106.54

The amount of Illinois oil run by the Tide Water Pipe Co. in July was 28,580.62 bbls. and deliveries were 53,804.32 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1925—		
July	724,481.26	564,713.19
August	673,662.38	660,649.97
September	706,434.87	510,697.61
October	706,532.00	633,682.32
November	664,556.30	488,449.19
December	665,086.99	578,938.47
1926—		
January	665,243.62	516,083.76
February	632,611.99	560,310.61
March	753,300.74	524,626.95
April	610,957.04	487,604.00
May	682,416.67	498,456.90
June	693,102.34	558,054.94
July	713,490.66	490,092.82

The Tide Water Pipe Co., Ltd., also delivered in July 173,325.78 bbls. of Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS New Orleans Galveston	Port Arthur Baton Rouge	Sabine Pass	Tampa	Total	Total All Ports
April	19,033	5,133	28,333	13,400	22,867	88,767	.....	.....	4,700	.....	4,700	93,467
May	27,065	7,903	15,387	13,452	17,742	81,549	.....	.....	4,032	.....	4,032	85,571
June	24,533	11,000	22,800	34,467	15,167	107,967	.....	.....	.....	.....	.....	107,967
July	15,677	2,903	24,678	12,065	12,516	67,839	.....	.....	.....	645	645	68,484

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS New Orleans Galveston	Port Arthur Baton Rouge	Sabine Pass	Tampa	Total	Total All Ports
April	15,200	14,000	76,833	10,633	39,333	156,000	19,200	24,900	2,000	4,433	50,533	206,533
May	12,387	12,258	75,516	11,645	21,548	133,355	17,710	45,226	1,936	5,677	65,549	198,904
June	15,800	10,800	87,300	6,500	21,267	141,667	25,300	42,267	6,567	3,900	78,033	219,700
July	21,517	7,774	89,548	4,774	26,194	149,806	*13,226	†39,774	‡2,032	4,452	59,484	209,290

*Received at Galveston district. †Received at New Orleans and Baton Rouge. ‡Received at Port Arthur and Sabine Pass.

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS
(IN BARRELS)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
August:	Month	21,055,580	14,441,040	11,936,079	3,558,087	7,450,580	1,858,543	3,250,448	3,177,000	66,677,357
	Daily average	677,599	465,480	385,022	114,777	240,341	56,727	104,853	102,484	2,150,883
September:	Month	20,062,763	14,825,040	11,264,890	3,393,270	6,457,950	1,776,570	3,235,625	3,212,000	64,228,108
	Daily average	668,759	494,168	375,496	113,109	215,265	56,219	107,854	107,067	2,140,937
October:	Month	20,015,076	14,921,199	11,196,511	3,477,146	6,409,281	1,871,830	3,394,990	3,248,000	64,534,033
	Daily average	645,648	481,329	361,178	112,166	206,751	60,382	109,500	104,774	2,081,743
November:	Month	19,095,907	14,590,980	10,650,087	3,221,760	5,927,955	1,758,882	3,088,121	2,992,000	61,325,692
	Daily average	636,530	486,366	355,003	107,397	197,599	58,629	102,937	99,753	2,044,190
December:	Month	19,249,711	14,128,848	10,930,455	3,308,816	6,047,883	1,763,966	3,187,164	3,086,900	61,698,743
	Daily average	620,959	455,608	352,595	106,736	195,093	56,902	102,812	99,552	1,990,282
January:	Month	19,069,563	13,674,813	11,049,715	3,250,536	5,489,604	1,726,390	3,136,280	3,014,000	60,410,901
	Daily average	615,147	441,123	356,442	104,856	177,084	55,690	104,396	97,226	1,948,741
February:	Month	17,163,963	12,392,016	9,943,232	2,877,812	4,756,836	1,584,184	2,778,605	2,931,000	54,427,648
	Daily average	612,999	442,572	355,115	102,779	169,887	56,578	99,236	104,678	1,978,844
March:	Month	18,825,786	14,312,886	11,014,238	3,334,887	5,115,837	1,889,663	3,161,250	3,349,000	61,003,547
	Daily average	608,283	461,706	355,298	107,577	165,027	60,957	101,976	108,032	1,957,856
April:	Month	18,091,771	14,468,190	10,799,760	3,330,120	5,127,510	1,959,570	3,231,404	3,183,000	60,191,325
	Daily average	603,059	482,273	359,992	111,004	170,917	65,319	104,239	106,100	2,006,377
May:	Month	18,687,144	14,507,008	11,940,797	3,516,640	5,482,939	2,231,938	3,459,489	3,317,000	63,122,955
	Daily average	602,166	467,968	385,187	113,440	176,879	71,998	111,596	107,000	2,036,224
June:	Month	18,269,417	14,073,510	11,783,550	3,366,450	5,064,760	2,205,480	3,437,905	3,365,000	61,566,072
	Daily average	608,981	469,117	392,785	112,215	168,822	73,516	114,597	112,167	2,052,202
July:	Month	18,743,199	14,657,482	13,983,759	3,613,267	5,019,892	2,173,813	3,336,664	3,348,000	64,876,076
	Daily average	604,619	472,822	451,089	116,557	161,932	70,123	107,634	108,000	2,092,777
	Total 12 months	228,259,870	170,988,012	136,493,073	40,248,791	68,351,037	22,800,829	38,697,945	38,222,000	744,062,457
	Daily average	625,369	468,460	373,954	110,271	187,263	62,468	106,022	104,718	2,038,527

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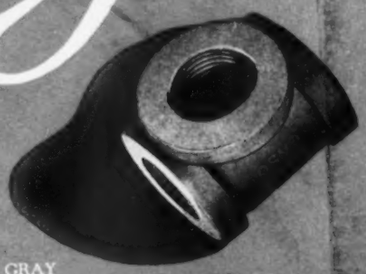

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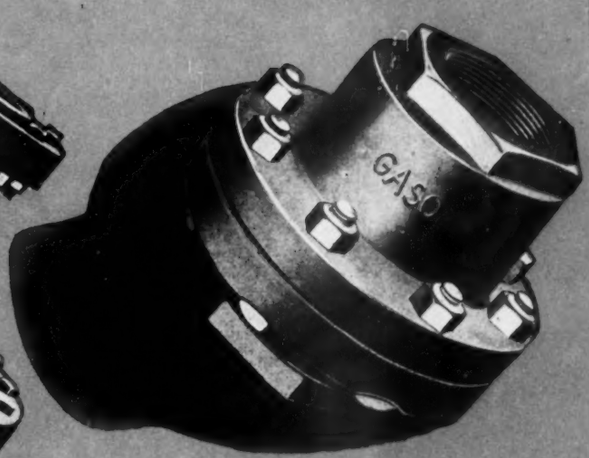

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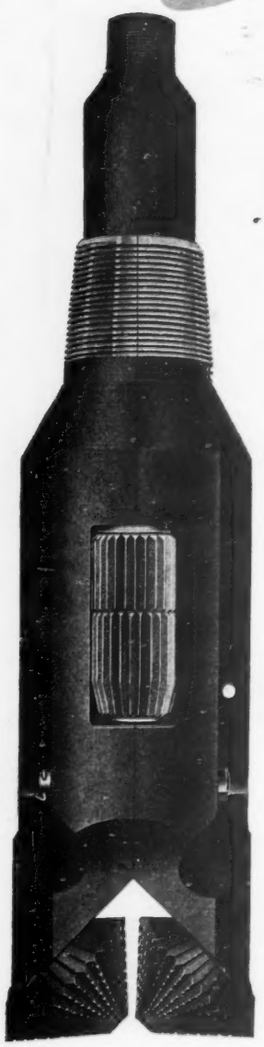

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